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TREATMENT
OF
SKIN CANCERS

W. S. GOTTHEIL, M. D.

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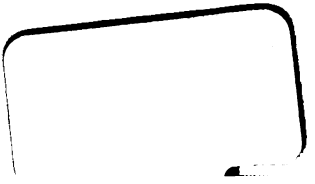

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THE TREATMENT OF SKIN CANCERS

By

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THIRD EDITION REVISED AND ENLARGED

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PREFACE

IN the following pages I have endeavored to give a succinct account of the cancerous process as it affects the external integument of the body. The modern theories of its nature, causation, and pathology have been briefly dwelled upon; but especial stress has been laid upon the two points which are after all the only essential ones for us, its recognition and treatment. Whilst none of the important therapeutic measures that are employed are neglected, I have elaborated more especially the caustic method, which is the one that experience has commended to me. It is my hope that what I have written may do something towards taking this most eligible method of treating cutaneous carcinomata out of the hands of unauthorized practitioners, and placing it where it belongs, at the disposal of the profession at large.

144 West 48th Street,
New York City.

W. S. G.

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PREFACE TO THE THIRD EDITION

IN spite of the sustained effort in cancer research that is now made in all parts of the world, but little new matter of permanent value has been added to our knowledge of the morphology of these tumors, or their causes, during the last year or two. On the other hand there have been decided advances in therapeusis. New methods are now largely applied, and the older ones have been made more precise and exact. In this new edition of Skin Cancers the chapters on treatment have been entirely rewritten and more than doubled in amount. Special attention has been paid to the subjects of the X-ray, radium, and the high tension current as means of treatment of cancer of the skin, and an attempt has been made to formulate their indications and to assign them their true positions in the therapeusis of these growths. In addition to this the illustrative matter has been largely increased.

By these changes the monograph has been brought up to date, and its usefulness to the general practitioner has, I hope, been increased.

W. S. G.

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PLATE NO. 1.

FIG. 1. Papillary Epithelioma of the Forehead; from photograph by the Author.

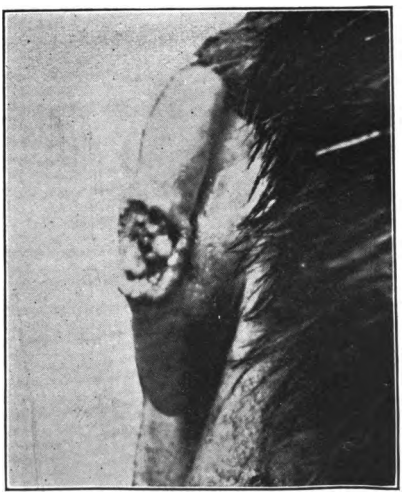

FIG. 2. Ulcerating Epithelioma of the Ear; from photograph by the Author.

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CANCER OF THE SKIN

CHAPTER I.

Carcinoma is one of the most frequent of the new growths, and one of the most interesting. Its common occurrence necessarily brings it within the field of every practitioner of medicine, its malignancy partly justifies the popular horror at its name. The problems of its etiology, still unsolved, form a fascinating field for the scientific pathologist. Its appropriate treatment is a subject upon which opinions differ widely, and for which definite rules are hard to formulate. The general integument offers a specially favorable field for the study of this, as of so many other obscure affections. Nowhere else in the body do we find so extensive an organ spread out in a thin layer, and accessible to our eyesight and our touch. Nowhere else is it so readily possible to call in the aid of instruments of precision; nowhere else can we during life so readily apply the microscopic touchstone that has revealed so much to us. The majority of carcinomata proceed primarily either from the body surfaces covered with pavement epithelium, the skin and the mucous membranes, or from secreting glands that open on to the surfaces. In the skin, if anywhere, carcinoma can be studied to advantage.

I need say but little of the importance of such study. We are in the peculiarly favorable position in regard to the skin, that we are able to appreciate the malignant new-growths at a time so early, and in a

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stage so little advanced, that the chances of successful treatment are much greater than when they are hidden away in the interior of the body. Their beginnings are slow and insidious. They may commence in apparently normal skin; but often they originate in abnormal structures that are innocent and almost unnoticed. Only too frequently they grow from a wart that has been present for many years, a wen or a nævus that has been carried so long that it has become a part of its owner's personality, a syphilitic scar that remains to remind its bearer of the vicissitudes of his youth, or a lupoid cicatrix that marks the site of a long extinct process. The recognition of the transition from innocent to malignant growth, from homologous to heterologous hyperplasia, is usually not difficult; the sign manual of cancer is plain to the experienced eye. The destruction of the cancerous growth at this stage is comparatively easy. Left to itself, as it too frequently is, it grows beyond our control and continues its fatal progress unchecked by our therapeutic efforts.

The following, to my mind, are the important points in the consideration of carcinoma as affecting the skin. In the first place a due appreciation of its starting points, of the lesions that not infrequently develop into it, of the harmless tumors that are liable to take on a cancerous growth. In what I may term the cancerous period of life these should always be carefully watched as soon as they show the slightest deviation from their normal quiescent condition. The obstinate fissure that will not close; the excoriation that will not heal; the senile wart that becomes irritated; the nævus that bleeds repeatedly; the scar that becomes hypertrophic; all these are suspicious conditions in the patient who has passed the meridian of life.

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In the second place, a knowledge of the appearance of the new-growth in its very earliest stages. The importance of this knowledge, from a practical point of view, can hardly be over-estimated. The prognosis of the disease depends largely upon the stage at which it is diagnosed. A well developed case is readily recognized, but often difficult or impossible to cure. Exactly the reverse is true of one at its very beginning.

And thirdly, the most approved methods of treatment. And here the dermatologist stands on somewhat different ground from the general surgeon, and sometimes advocates methods that might not commend themselves to him. Nevertheless, his treatment stands the test of experience, and there are definite pathological reasons for its success. Some cases of cancer are, of course, best treated by strictly surgical measures. But a very large proportion of the new-growths of this nature with which the dermatologist has to deal are better handled in other and non-operative ways. A fairly extensive experience, and the observation of a number of cases for years after their cure, enables and encourages me to speak with emphasis.

I shall have but little to say upon the pathology of cancer. Much has been written about it, but little is positively known. Moreover, the subject is too extensive a one for the limits of these papers, and it belongs rather to the domain of general pathology.

Whilst all the varieties of carcinoma occur in the skin, some of them are of such rare occurrence as to be dermatological curiosities, and will receive but brief consideration. Others are peculiar to the skin, and are the common forms in which the disease occurs in that organ. With these we shall more specially have to deal.

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Fifty years ago all malignant tumors were called cancers; the terms were interchangeable, and much confusion was thereby caused. Some writers even of recent times use the term in this sense; it may be convenient from a clinical standpoint, but it cannot be countenanced in the light of our present knowledge. Our ideas have become clarified, and we now differentiate sharply between the carcinomata and other malignant neoplasms. The true cancer is always an epithelial new-growth, though it always contains some, and sometimes a large amount of common connective tissue. It is an atypical epithelial neoplasm, in which the new cells are not arranged in the ordinary manner, and do not grow in the usual way that is characteristic of the epithelial tissues, but are grouped in masses, nests or columns. These masses of new cells have an independent growth, and cause the destruction of the normal elements of the tissues among which they develop. They are contained in a stroma more or less abundant, composed of fibrillated connective tissue arranged in an alveolar manner. The various clinical and pathological varieties of the disease are occasioned in the first place by the relative amount of connective tissue stroma to proliferated epithelium. The more of the former that is present the harder the consistency of the tumor, and the slower its rate of growth; the less stroma, the softer the tumor and the more rapid its development. The next factor is the condition of the epithelium itself. This is subject to various degenerative processes that modify the appearance and the course of the growth. Finally, the accidents of location are of influence. Carcinomata have different courses, different prognoses, and different treatments, in accordance whether they develop from the

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skin, from the mucous membranes, from the points at which these two tissues merge into one another, or from the internal organs of the body.

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CHAPTER II.

THE CAUSE OF CANCER.

If deep thought, painstaking investigation, and skillful experimentation would necessarily lead to definite results, we should have a better knowledge than we possess of the cause of cancer. We must frankly confess that the subject is still entirely wrapped in darkness. Nevertheless, clinical experience and scientific research have, in the course of time, put us in possession of a number of facts bearing upon the mode of origin of these growths; and they stand uncontroverted, although no common and plausible theory can be framed to account for them all. Many investigators have advocated theories based upon one or more of them; and arguments more or less weighty, and observations more or less cogent, can be cited in support of all of them. It will be useful to pass them briefly in review.

1. *Senility.*—There can be no possible doubt that the changes that occur in the integument as old age comes on, predispose it, in a general way, to the occurrence of cancer. Not only does the disease occur mostly in old individuals, or in those who, though young in years, show evidences of senile changes in the skin and other tissues. A large proportion, classed as high as ten per cent. by some authorities, of all those who attain the senile age, die of one or the other varieties of carcinomatous disease. Senile warts, pigmentations, and excrescences are frequently the

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starting points of cutaneous cancer. But the relationship between these hypertrophic changes and the development of the carcinomatous growths is entirely unknown.

2. *Heredity.*—This is one of the oldest theories regarding the etiology of cancer, and is supported by a not unimposing array of facts. At the time when the heredity of consumption was implicitly believed in, it was noted that next to that disease, cancer had most frequently a hereditary history, though the tendency to its appearance increased with the advancing age of the patient. Life insurance companies charged an additional premium if two or more members of a family had died of the disease; and if, in addition, the applicant was over fifty years of age, de Havilland Hall recommends that he should be rejected entirely. It cannot be doubted that cancer occurs more frequently in families in which it has once made its appearance than in others; but whether this is due to heredity, properly so called, or to other factors that are liable to influence persons occupying the same dwelling and living under the same conditions, such as direct contagion, etc., we are unable to say.

3. *Locality.*—This theory as to the cause of cancer, has been held by some authorites. D'Arcy Power and Wells have collected a series of cases in which several deaths from carcinoma have occurred in a comparatively short time in the same house. In one of them three persons who occupied the same bedroom in succession, died of cancer in nine years. Shattock has noted a house in which four persons died of cancer in fourteen years. Several similar cases, without there being any blood relationship between the sufferers, have been recorded, and maps of cancer houses and cancer areas have been made.

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The same facts have even been recorded in animals; thus Cooper reports three cases of cancer of the tongue in a herd of cows pastured on a piece of land near Chatham. There is no reason to doubt the correctness of these observations, but they are much more readily explained on the supposition of a persistent local infecting cause.

4. *Climate, Soil, General Hygienic Conditions and Drugs.*—Some statistics seem to show that cancer is more prevalent in damp, clayey soils; but others again tend to show almost the reverse. In a general way bad hygienic conditions seem to favor its spread. This is not surprising, since whatever lowers the resisting powers of the tissue cells increases their liability to degenerative changes and to injury from external causes. Hutchinson is responsible for the observation that the habitual ingestion of arsenic increases the liability to cutaneous cancer, and he does not think this surprising, since when administered for a long time, as in psoriasis, it causes reddening and irritation of the affected patches.

5. *Inclusion.*—First suggested by Cohnheim, this theory was for years a favorite one. The idea that certain cells remained in their embryonal condition until late in life and then, when stimulated into activity, exhibited a peculiar vitality and an embryonic mode of growth, was one that appealed to the pathologists; but it remained a pathological theory and was in no real sense an answer to the question as to the etiology of the disease.

6. *Irritation.*—This theory as to the origin of cancer is supported by many facts of common observation. Traumatisms are undoubtedly influential in many cases of carcinoma. It appears on the lower lip at the point pressed upon by the pipe in smokers; on the

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FIG. 3. Rodent Ulcer of many years' duration; from photograph by the Author.

FIG. 4. Superficial Carcinoma in Multiple Foci; from photograph by the Author.

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scrotum in uncleanly and soot-begrimed chimney-sweeps; in lacerations of the cervix uteri. It begins in warts of all kinds—in nævi, pigmentary and vascular—that have been scratched and irritated; and in syphilitic and lupoid ulcerations and scars under similar conditions. So well recognized is this fact, that all such structures in persons of cancerous age must be carefully watched when they show any tendency to irritation or ulceration. Nevertheless, it may be effectively urged that the irritated lesion is only the entrance gate through which the infective agent reaches the tissues.

7. *An Organic Cause.*—Foa first described certain parasitic bodies consisting of a soft protoplasmic body inclosed, with a small nucleus, in a double capsule, as the organism of cancer. He found them in many carcinomatous masses and secondary nodules, but not in the degenerative areas. Plimmer found similar bodies in 400 cases of cancer examined at the Cancer Hospital, and did not find them in other new-growths, such as fibromata, papillomata, gummata, etc. Korotnoff, Clarke, Wickham, and others have found these bodies. Adamkiewicz has found protozoa, which he called sarkolytes. Most investigators, however, regard these bodies as degeneration products, or as appearances artificially caused by the staining and hardening agents used. Cultures and inoculations have so far entirely failed. The case, as regards their etiological relationship to cancer, is as yet entirely unproven.

It is very evident, therefore, that we possess no certain knowledge as to the cause of cancer. We know that it is prone to occur in senile tissues; that cases are more likely to appear in families and in localities where it has been present before; that bad

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hygienic conditions favor its development, and that innocent epithelial growths and tissues are very liable, under the influence of irritants, to be the starting-point of its growth. All these facts point more or less directly to the existence of an organic, living cause; and, although none such has, as yet, been demonstrated, the indications are that it will ultimately be found.

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CHAPTER III.

THE PATHOLOGY OF CANCER.

Cancer is essentially an atypical new-growth of the epithelial tissues. Perhaps it is more correctly called an overgrowth, for it always originates from pre-existent epithelial tissue. This epithelium is either of the pavement variety, such as is found on the free surfaces of the body, or of the cylindrical and glandular kind, which occurs in the internal organs. It is with cancerous overgrowth of the former variety only that we are here concerned.

In carcinoma beginning in the pavement epithelium the new growth of epithelial cells commences in the deeper layers of the rete. The interpapillary processes grow irregularly, spreading upwards, downwards and laterally, and finally penetrate into tissues in which no epithelial cells are found under normal circumstances. The cells are arranged in masses contained in connective tissue alveoli; and to the relative amounts of cell and stroma substance, together with the various secondary inflammatory and degenerative changes to which they are subject, the different clinical and pathological varieties of the disease are due.

The typical cancer of the skin begins as a nodule or a nodular infiltration. It forms a hard, cartilage-like tumor, sections of which in the very early stages have a rosy red hue, changing later to a dark red or greyish. Their succulence varies with the relative

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amounts of soft cell substance and harder stroma present; but a greater or less amount of greyish or yellowish white fluid can be scraped from the cut surface, in which will be found a number of reddish white or whitish lumps, the dislodged cell masses.

The first change noted in the simplest form of superficial cancer is an increase in the number of the epithelial cells of the interpapillary parts of the rete; the rete processes are prolonged and enlarged at their ends. This increase causes more or less compression of the cells; hence, whilst the peripheral layers of cells of the hypertrophied processes are cylindrical, the central layers are cubic, rhomboid, or flattened. Many of the cells have nuclei and nucleoli, and occasional vacuoles are present.

The direction of the enlargement of the epithelial masses depends greatly upon the mechanical conditions that are present in the tissue affected. The very first increase is downwards towards the cutis; but, if hindered in that direction, the growth is upwards or lateral. Thus we get great masses of flattened epithelium with branches penetrating the corium in all directions forming the tubular variety. In other cases the hypertrophied interpapillary processes rise above the surface of the skin and form papillary excrescences. The heaped up epidermoidal cells preserve their cohesion to a very great extent, and they then form the papillary variety of the disease. The epithelial masses do not penetrate the corium until late; they accumulate upon the surface, and the necrobiotic changes that inevitably occur appear there first.

The deeper forms of cancer of the skin are due to the invasion of the deeper layers of the corium and the subcutis by the epithelial new-growth. The cell masses are larger in size, penetrate deeper, and are

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more dendritic. They enter into and grow in the lymphatic spaces of the connective tissue, invade the larger lymph channels, and reach the lymphatic glands. Finally, the tissues under the subcutis, the muscles, nerves, and even the bones may be involved.

In whichever direction the epithelial growth occurs, it presents under the microscope certain characteristic appearances. The epithelial cells are pressed together into compact masses more or less circular or oval in shape, depending upon the angle at which the process is cut by the section knife. The central cells in the masses undergo a horny transformation, whilst the outer ones are arranged in concentric lamina and flattened. These are the cell nests, epithelial pearls, or cancroid bodies, once supposed to be characteristic of this form of tumor. Such is not the case, however, as they are found in certain situations and in certain sections of normal skin, and they are only of importance when found in connection with the other characteristic arrangements of carcinoma. The epithelial cells are grouped entirely alone, and are not intermixed with the connective tissue elements, as in sarcoma.

The cell nests and columns are bounded by a stroma of connective tissue in which run the vessels and lymphatics that supply the tissue. This stroma varies greatly in amount and consistency in the various cases. In the harder varieties of cancer it is dense and abundant, the cell nests are few and far between, and contain but few and possibly degenerated cells. In the softest varieties the nests are abundant, the cells numerous, and the connective tissue stroma small in amount.

The presence of the invading processes and columns of epithelium in tissues to which this variety of cell

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is foreign, causes inflammatory reaction, suppuration, ulceration, etc. Small-celled infiltration, in the deeper tissues, and ulceration when the more superficial ones are involved, occur sooner or later. These secondary changes are responsible for some of the clinical varieties of the disease. Atrophic and degenerative changes also occur in the mass of new epithelial cells and in the stroma. Fatty degeneration is the commonest, but mucoid and pigmentary degeneration, calcification, and ossification, also occur. All these changes appear first in the center of the cell mass, where the nutritive conditions are poorest. Hence the center of the growth may be in a condition of fatty degeneration, or ulceration, whilst the epithelial proliferation is still progressing at the margins.

To sum up the matter, the process in carcinoma of the skin consists of an abnormal proliferation of epithelium growing into the deeper tissues or projecting outwards, with the inflammatory and degenerative sequelæ therefrom.

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CHAPTER IV.

THE FORMS OF CANCER OF THE SKIN.

Cancer of the skin appears in several different forms, and may, as has been said, occur as a primary affection, or develop secondarily to cancer of other organs.

The following chief varieties are to be noted:

1. *Carcinoma cutis, or true cancer of the skin,* is the rarest of these forms, and is always of the scirrhus variety of the tumor. The growths formerly described as melanotic carcinoma, are really sarcomas. It sometimes occurs as a primary and generalized affection, but is more commonly secondary to cancer of the female breast or of the alimentary canal. A lenticular and a tuberose form are distinguished.

Carcinoma lenticulare appears as various-sized, hard, smooth, flat or raised nodules. The tumors are usually multiple and sometimes very numerous. Their color is a dull brown or reddish. At first they are discrete, but as they grow and increase in size, they coalesce into larger tuberous masses. Finally, they form large plates of irregularly indurated and thickened skin which, on the chest and trunk, forms a dense leathery envelope which impedes respiration (cancer en cuirasse). The lymphatic glands enlarge, and the lymphatic flow is interfered with. As the masses increase in size, the vascular supply is also interfered with by the connective tissue new-growth, softening and ulceration occur, and the ulcerated surface is not infrequently covered with masses of dark-

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red, easily-bleeding fungating tissue. Death occurs finally from wasting or from metastatic deposits in the internal organs.

The tuberose variety is rarer, and may also be primary or secondary. Here the hard, cancerous deposits appear as circumscribed, flat or elevated, rounded tubercles, pea to egg-sized, and usually deeply seated in the skin. The nodules are larger than in the lenticular form; their color is a dull brown or reddish or violaceous; and they are sometimes very numerous, and scattered over the surface of the body. Breaking down and ulceration finally occur, and deep fungating ulcers appear.

There is no essential difference between the two forms of scirrhus of the skin in their termination; death occurs finally from wasting or from metastatic deposits in the internal organs.

The other and commoner varieties of cancer of the skin are more superficial and less rapidly fatal, and are known under the general name of epitheliomata. Of these the first to be considered is the

2. *Superficial or discoid epithelioma, cancroid or rodent ulcer.*—(Fig. 4.) This is the most frequent form of skin cancer, and is the least troublesome. It may last for many years without inconveniencing the patient much. It begins as one or more insignificant-looking minute papules, of a reddish or yellowish color, and of a peculiar dirty, pinkish, waxy appearance, with a glance like that of mother of pearl. Usually a single papule only is present; but there may be several of them, either grouped or scattered. Sometimes they grow upon an ordinary or a senile wart, a sebaceous cyst, the scars left by lupoid or syphilitic disease, or a chronic fissure or excoriation. The papule gradually enlarges, and finally an excoriation appears in its mid-

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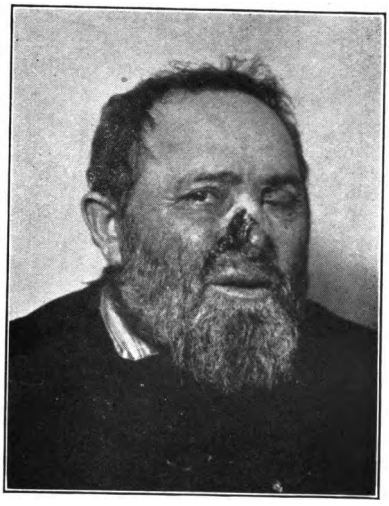

FIG. 5. Epithelioma beginning in the Ala Nasi which progressed until the entire side of the nose had been destroyed and the mucosa of the septum and the floor of the nostril had become involved. Beginning Epithelioma of left upper eyelid. Photograph by the Author.

FIG. 6. Epithelioma beginning in the lobe of the ear. Deep involvement; exposure of the Petrous Bone; City Hospital Case. Photograph by the Author.

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dle covered by a small scale or crust. Removal of this scale reveals the presence of a flat superficial ulceration covered with granulations or with a scanty, viscid secretion. In its fully developed form the superficial epithelioma appears as a more or less extensive, very shallow, indolent ulceration. Its edges are hard, wall-like and elevated. Its margin is sharply defined, hard, and has the peculiar waxy glance; and minute, red, dilated blood-vessels run irregularly over it. Waxy-looking, hard, and rounded nodules, the cancroid pearls, are not infrequently present near the margins of the ulceration. The seat of this form of malignant disease of the skin is usually at the place where skin and mucosa meet. It is most common upon the lips, alæ nasi, and eyelids, and next most frequent upon the genitals, glans penis, prepuce, etc. Its course is extremely chronic. It may grow slowly for many years, the general health remaining excellent. Then it may cease to grow; but far more commonly, if left to itself, it finally invades the deeper structures, and develops into the infiltrating deep variety, or into the papillary form of the disease.

3. *Deep or tubercular infiltrating epithelioma.*—(Figs. 2 and 3.) This is rarer than the superficial form, and more rapid in its course. Like it also, it often originates from a wart or nævus. When it does not it appears first as a pinhead to split-pea-sized tubercle set deeply in the skin or subcutis, slowly growing to coin-size or larger. The waxy glance is more or less evident; the surface is delicately vascularized; and the color of the tumor varies from red to purplish. It develops into one or more flat or globular tumors or a thick placque, with steep or everted walls, and a depressed atrophic center. In the course of months ulceration and breaking down begin at the surface or the periphery; the

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destructive process varies in rapidity, but is less than that of the superficial form. The resultant ulcer is rounded or irregular, and crateriform, and its surface bleeds easily on touch. Its walls are hard, everted, and purplish. Its secretion is scanty, pale yellow and viscid, or thin, purulent and foul smelling. The infiltration around the margin of the ulcer and at its base is always marked. There is more or less pain of a sharp, lancinating nature, at all stages of the disease. The neighboring lymphatic glands enlarge and sometimes break down. Eventually the muscles, fasciæ, cartilages, and even the bones become involved. Death finally occurs from marasmus or exhaustion or hemorrhage, in from a few months to three years. The commonest site of the affection is upon the mucous membranes, more especially upon that of the tongue.

Papillary epithelioma, or malignant papilloma.—(Fig. 1.) This is the most rapidly fatal form of cutaneous epithelioma, and whilst usually only a late stage of one of the other two forms, may occur as an independent affection. Like the other forms, it may originate in a wart, a scar, a nævus, or in the normal skin. It appears as a raspberry or cauliflower-like, elevated, pedunculated or sessile vegetation. Its shape may be battened and fungiform, cylindrical or pointed. The mass is of a bright, florid color, and is very vascular, bleeding easily. Pain, dull or acute, is usually present. It gradually enlarges to egg-size or larger, and then forms a lobulated, spongy mass, the surface of which may be covered with dried epidermis, and of a dirty whitish-yellow color, or macerated and moist, and bathed in foul viscid or bloody secretion. Deep fissures and excoriations occur, and finally deeper ulceration and breaking down.

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Rounded or oval ulcerations, with everted or undermined purplish-red edges, and an irregular base covered with granulations, or with a serous, offensive discharge, or crusted, are thus formed. Under the ulceration, as under and around the original papillary mass, the characteristic hard induration of the cancer is present. The lymphatic glands enlarge, harden, coalesce, and break down. In the course of time the deeper structures, the fasciæ, fat, muscles, and even the bones become involved. The termination of the disease is by death from cachexia or exhaustion. The commonest site for this form of epithelioma is upon the genitals, the glans penis, scrotum and the labia; and it is also frequent upon the mucous membranes.

Finally, there remains to be described the very superficial form of epithelioma known as

5. *Paget's disease of the nipple.*—This occurs upon the nipples of women of from forty to sixty years of age. It resembles an ordinary eczema very greatly, and is known by some writers as eczematoid epitheliomatosis. The entire mamilla and the areola look eczematous, moist and crustaceous, but a careful examination will reveal some characteristic induration of the skin under the affected area. One breast usually is affected; a moderate itching and burning accompany the disease. The physical features resemble those of an ordinary eczema so closely that in some cases its intractability is its only characteristic feature. It finally develops into the deeper and infiltrating varieties of the disease.

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CHAPTER V.

THE DIAGNOSIS OF CANCER OF THE SKIN.

This is certainly the chief point for consideration in the whole subject of cancer as affecting the integument. If it is made early in the course of the disease, the prognosis is in many cases good, and the treatment simple. Not made until late the prognosis is often bad, and the treatment difficult or useless. A careful consideration of the physical features of skin cancers in their earliest stages, of the structures, pathological, and physiological, from which they are liable to develop, as well as of those other morbid conditions from which they must be differentiated, is of primary importance.

I. The true scirrhus carcinoma of the skin is usually readily recognizable. As has been already mentioned, it is of very rare occurrence save when secondary to carcinoma of other organs, more especially to that of the female breast. It usually occurs, therefore, either in conjunction with advanced cancerous disease of the internal organs, or in the scar left after operative procedures therefor. In either case its recognition cannot be a matter of difficulty. The hard, smooth, glistening nodules or small tubercles, either flat and subcutaneous, or raised and projecting; the dull brownish, reddish, or violaceous color; and the gradual growth and coalescence into larger plates and indurated masses, until finally they form the complete cuirasse, are quite characteristic. When ulcera-

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tion has occurred, the margins show the features of the original nodules, some of which will be found that have not undergone breaking down. It may be confounded with the nodules of sarcoma. This disease, is, however, of much more rapid evolution, running its entire course in a few months. It appears in early, not late life; there is not such marked tendency to ulceration as in cancer; it does not follow cancer of the internal organs; and it shows a marked tendency to appear in distant as well as in neighboring parts.

II. The superficial epithelioma or rodent ulcer begins as a small painless induration, which very slowly grows into a characteristic ulcer. From the very beginning the nodule shows the distinctive features due to the accumulation of epithelial cell masses in the deeper layers of the cutis. There are the cartilaginous hardness, the waxy appearance, and the dilated, ectasic vessels running over the surface. When ulceration has in time set in, the margins of the loss of tissue show the characters of the original lesion. The ulcer itself may be smooth or granular, dry, moist, or crusted, of a brighter or darker red color. Its edges are narrow and hard bands, somewhat undetermined, or everted, of waxy glance, and marked with dilated vessels. Just outside them may be found the epidermic globes or cancroid pearls, hard, waxy looking, milium-like nodules. The absence of pain, and of any tendency to spread into the depths of the tissue, with the extreme chronicity of its course and slowness of its growth, will, with the above mentioned features, sufficiently characterize this form of the disease.

Rodent ulcer may be confounded with the slow superficial serpiginous syphiloderm. This latter,

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however, does not remain as a papule for months and years before breaking down occurs; its course is very much quicker; there is a marginal induration, but not nearly so hard a one as that of cancer; there is no waxy glance; there are usually several points of ulceration; it is most often seen in early adult or middle life; other evidences of lues, past or present, are commonly present; and, in doubtful cases, the effect of treatment will soon settle the diagnosis. The gumma is never so hard and firm as the carcinoma; it soon goes on to softening and fluctuation; and its rapid course and reaction to appropriate treatment will serve to distinguish it.

More important is the differentiation of a beginning epithelioma of this variety from an ordinary wart, more especially as it frequently develops from it. In its very beginning it is a matter of difficulty to decide when a wart, which perhaps has existed harmlessly for decades, is beginning to undergo cancerous degeneration. Usually the first symptoms are those of irritation. The wart becomes painful or itchy; it bleeds upon slight provocation; and finally the characteristic induration begins to appear around its base. The only safe rule is to regard every wart or excrescence that shows signs of irritation or any departure from its normally quiescent state, with suspicion, more especially when it occurs in a patient advanced in years. Persistence of the symptoms, even without the presence of the characteristic signs of malignant growth, should cause it to be regarded as an epithelioma.

III. The deep or infiltrating epithelioma begins as one or more deep seated split-pea sized tubercles, of characteristically hard consistency. As it grows in size into a globular tumor or a placque, its surface as-

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sumes the waxy appearance and the vascularisation before mentioned. The ulceration that finally appears is crateriform, its base is uneven, reddish or violacious, perhaps granular; its secretion is scanty and viscid; its walls are everted and raised; and the infiltration under and around it is marked. Its growth, though slow, is faster than that of the more superficial form. This form must be differentiated from:

Syphiloderma by the characteristics mentioned above. Its rate of progress is more like that of the latter disease; but the comparative softness of the induration; and its non-vascularisation, together with the age of the patient and the results of treatment, should suffice to prevent mistake. An important differential diagnosis is that from

Lupus vulgaris. Lupus, however, begins in youth, and rarely occurs after the 35th year, whilst epithelioma rarely occurs before it. The elementary lesions are multiple, and more diffuse, and consist of the characteristic, soft, brown, semi-translucent, apple-jelly papules; and there is no dense, firm, and indurated wall surrounding the ulceration.

Occurring upon the genitals and on the mucous surfaces, the deep seated epithelioma must be distinguished from

Chancre and Gumma.—Chancre occurs as frequently in youth as in old age; has not the stony hardness of carcinomatous disease; is accompanied or followed by other evidences of luetic disease; and reacts to specific treatment. Gumma also runs a comparatively rapid course, and soon breaks down; and here also appropriate treatment soon reveals the nature of the disease. Occurring in the mouth or throat, however, or on a part of the body other than those usually exposed to sexual contagion, and in elderly individ-

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uals, the differential diagnosis may be a matter of great difficulty. The difference of hardness is often inappreciable. The characteristics of the ulceration, when situated for instance on the soft palate, are not very characteristic. Two efficient means, however, are at our disposal to make the distinction; first, the results of a vigorous anti-luetic treatment, with the iodide of potassium in very large doses, and, second, the excision of a portion of the growth or ulceration, and its examination under the microscope. The first should be tried in every doubtful case, and its verdict, if negative, confirmed by the second.

IV. Papillary or fungating epithelioma appears as a raspberry or cauliflower-like, vascular, easily bleeding growth, of a bright, florid color. It is usually covered with viscid, foul-smelling secretion, but it may be dry and yellow on the surface. Fissuring and breaking down generally occur, and the ulceration that results does not differ in its characteristics from that of the deep seated form above described. It is a fairly rapid form of the disease, and is especially apt to occur around the genitals and on the mucosæ. It is especially important to differentiate it from the ordinary

Condyloma. This is often a matter of difficulty, especially in the early stages. The age of the patient is of some assistance; but condylomata may occur in advanced years. The appearance of suspicious induration at the base and margins of the growth, the presence of ulceration in any part of the papillary tumor, and the obstinate, though slow extension of the mass, are the main points that enable us to make a diagnosis. These cases are frequently regarded as ordinary venereal warts in their early

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FIG. 7. Fungating Epithelioma of Penis; cured by complete removal of the external genitals. From photograph by the Author.

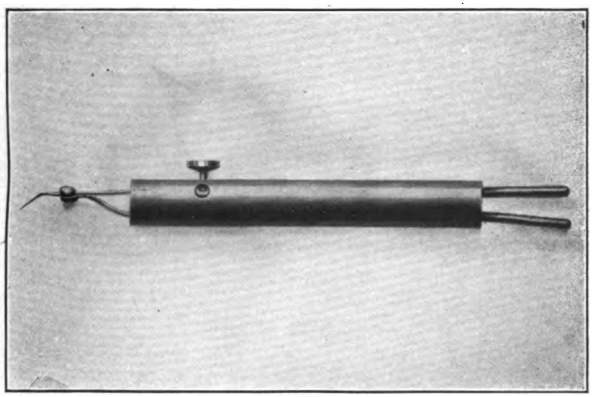

FIG. 8. The Author's Micro-cautery.

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stages, and their features are obscured when the abundant papillary growth has set in.

V. Paget's disease has only of late years been recognized as a variety of epithelioma, and the name, eczematoid epitheliomatosis, by which it is sometimes known, testifies to the difficulty that is often experienced in distinguishing it from the commonest of skin diseases. It is to be described as a moist, crustaceous, eczematous looking affection of the nipple, with an induration that is very slight. It occurs in elderly women, and is accompanied by moderate burning and itching. It is extremely chronic, lasting for many years before it develops into one of the other forms of carcinoma. Its diagnosis from

Eczema is to be made in its earliest stages, by its location, chronicity, and extreme obstinacy and recalcitrance to treatment. A chronic eczematous affection of the nipple occurring in a woman over forty years of age, resisting the ordinary methods of treatment, and showing some amount of induration, is always suspicious.

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CHAPTER VI.

THE TREATMENT OF CANCER OF THE SKIN.

General Considerations.

Whatever the future may reveal as to the true nature of the cancerous disease it is evident that in its beginnings it is a purely local affection. This is manifest in every location accessible to observation, and especially in cancer of the skin; for here the affection often begins in a nævus, a senile wart or other innocent growth, remains strictly localized for many years, and may never cause systemic infection. These very facts are the main theoretical bases for the prevalent belief that an organism of some kind will ultimately be established as its cause. In the skin and visible mucosæ more especially cancer is recognizable almost at its beginning; and therefore the various constitutional remedies that have been recommended for its treatment can be dismissed with very few words.

A mere list of the names of the drugs that have been used would include a large part of the pharmacopeia and even many of the mineral waters; but not one of them has stood the test of use by other than its proposer. I shall mention only one of the oldest and two of the most recent, and mention only to condemn. Arsenic, that much abused dermal panacea, has long had a reputation for usefulness; but at the present moment there is but a single authority—Lassar—who claims to have cured carcinomatous ulceration of the

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skin by its internal administration. His cases are not conclusive; and all other investigators have found that the drug exerts only its well-known general tonic effect, and has no influence at all on the local condition.

Chelidonium majus, internally as well as externally, was used by Denissenko, and the good results that he reported at first were confirmed both abroad and here. But even the originator of the method no longer obtains them, and recent reports have been entirely unfavorable. Death has even resulted from the injection of one syringeful of a 50% solution of the extract, equalling 8 grains of the drug. It is not yet decided that chelidonium has not some deterrent action upon epithelial cell growth; but as a remedy for cancer it is entirely discredited. Cinnamon, in the form of large doses of the fresh infusion, has been thoroughly tried by Hulke and others; in spite of the previous favorable reports there were no results; the cancerous growths increased just as if nothing had been used.

Local treatment, then, remains the only one to be seriously considered; and as regards this professional opinion is divided into two distinct camps. One naturally includes all the surgeons and the numerous practitioners who regard carcinomatous disease of the integument from a purely surgical point of view. These latter have been so persistently taught for years that ablation or excision is the only reliable mode of treatment that they hardly regard the subject as open to question. The other party advocates the destruction of a large majority of the skin cancers by chemical means; and it includes the great majority of those exclusively engaged in the treatment of diseases of the skin, that is to say, of those who see and handle most of these cases. It includes, strange to say, but a

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small minority of the general profession, in spite of the persistency with which the non-surgical methods have been advocated for years, and the good results that have been and are still daily attained.

The truth, as usual, lies between these two, but not in the middle. In certain selected cases of cancer of the skin the knife is undoubtedly the best treatment, and in a few of them it is the only method. In the great majority of cases, however, it is the less eligible and the less successful treatment. And this for the following reasons:

Removal with the knife to be effective must be complete; and the amount of tissue requiring excision to make it so is a matter of individual judgment. The carcinomatous tumor, whilst sharply limited, is not a regularly shaped or encapsulated mass. It is irregular in form, with long arms and projections of proliferating and diseased epithelium that extend to an unknown distance into the surrounding and apparently healthy tissue.

Where does the cell infiltration end? Where does the healthy tissue begin? Far beyond the apparent limits of the tumor, where the skin is seemingly perfectly normal, the microscopic and malignant cell growth may extend. Almost isolated cell nests, each one filled with structures endowed with all the malignant potentiality of the cancer cell may lurk far beyond the disease limits. The surgeon meets this acknowledged danger by a wide excision; he deliberately removes large areas of probably unaffected tissue in order that he may not leave disease foci behind. But since the great majority of these lesions are situated upon the face and head, and scarring and mutilation must be minimized, the tendency remains to remove too little, and unfortunate relapses occur. Is it

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any wonder that the operator's judgment should often be at fault; that, however far beyond the affected area he may cut, some disease cells may be left behind to serve as a nucleus and a focus for the new growth? No one can tell with certainty where cancerous tissue is absent and healthy structures only are present; the knife cannot discriminate between the two. Hence the entire area, or the entire part must be removed, healthy and diseased tissue being necessarily sacrificed together.

The result of this is that we see every day extensive and deforming operations done for the relief of extremely localized and superficial malignant growths. Graftings and skin transplantations, large excisions and removals, with all that this implies to the patient at the time, and with all the subsequent disability and deformity, are done for apparently insignificant lesions.

I should not for a moment object to these procedures if they were the only ones or the best ones that we could employ. In cancer certainly the end justifies the means; and no sacrifice of time or suffering or money or subsequent disability or deformity is too great to pay for the riddance of the organism of a disease so serious as carcinoma. But they are not the only ones and not even, in the great majority of cases, the best ones. We have other methods that are just as radical as the knife, and more certain, and that are applicable to the great majority of the cases under consideration. In the light of our present knowledge and experience I consider such operations as removal of the breast for Paget's disease of the nipple, amputation of a finger or an ear for superficial epithelioma, or wide excision and skin transplantation for rodent ulcer of the face, as in the vast majority of cases unnecessary and unjustifiable operations.

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Again, from the patient's point of view, a cutting operation is to be avoided when possible; and when a physician is the sufferer he holds precisely the same opinion. It has been my lot to treat a number of medical men for this kind of disease, and I know of no more uncompromising opponents to the knife than they. Scientifically, of course, this consideration has no weight at all; but practically it is of importance, since it is often a chief factor in deciding the patient whether or not to submit to our treatment.

Finally, another consideration deserves mention here. Cancer of the skin, as I have said, has been cured without the use of the knife, and is being so cured to-day. Unfortunately most of the work of this kind is done by irregular practitioners and quacks. Even excluding all the cases of false diagnosis, the syphiloderms and warts called cancer by dishonest or ignorant men, and excluding also the cases that are not cured at all or that relapse, a certain number of true cancers of the integument are cured by the advertising specialists. I am often asked by practitioners from all parts of the country to explain these cases, and I can readily do so. There are better methods of curing the vast majority of skin cancers than the knife; and these men know them and use them, and we do not. It is time that this weapon was taken out of their hands and put in those of the profession at large.

Before taking up the details of the various methods of local treatment a few general considerations respecting what I may designate as non-surgical means will be useful. Destruction of the diseased tissues being the object to be attained, cauterising and destructive agents of various kinds must be employed. Now these fall into two distinct and separate classes,

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with entirely different actions and indications. In the first place we have what may be called the Indifferent Cauterants, agents that destroy healthy and diseased tissues alike wherever their action reaches. Such are the actual cautery, the mineral acids, sulphuric, nitric, and the acid nitrate of mercury, and the caustic alkalies, such as caustic potash. Their employment is subject to very much the same limitations as is that of the knife; the surgeon must judge, at the time of application, just how much destruction shall be done. In the second place we have the Selective Cauterants, the best examples of which are arsenic and pyrogallol. Their cauterising action is limited to the immediate tissues with which they are in contact; and their special efficacy in the various forms of skin cancer is determined by another of their properties that must be understood.

It is a well-known pathological fact that neoplastic tissues of all kinds are of a less vigorous vitality and have a feebler power of resistence to trauma than the normal tissues of the body. Even a scar, composed of dense and resistant white fibrous tissue, breaks down and ulcerates under an amount of injury that healthy tissues would resist with a vigorous inflammatory reaction ending in resolution. This is much more the case with the immature epithelial cell masses of cancer; they regularly break down and die under injuries that normal epithelial cells are entirely capable of enduring. Upon this fact depends the whole theory of the employment of the selective cauterants in cancer. They are to be so used as to excite a degree of inflammation in the entire affected tissue of sufficient intensity to cause necrobiosis of the new cells of the tumor mass, and yet one from which the hardier normal tissue cells can recover. All the cells

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in the tissue are subjected to the injury, the visible normal and abnormal elements as well as the invisible and hidden ones of both kinds. To such an injury the healthy cells respond with a salutary reaction, whilst the diseased cells succumb and die. And this occurs throughout the affected area and beyond it. Far outside the borders of the apparent tumor in the skin, and deep down in the tissues below it, the trauma or "insult," as the Germans well call it, searches out and causes the death of the outlying arms and islands of tumor tissue. So certain is this effect that one accustomed to treat skin cancers in this way can tell by the inflammatory reaction to the remedy that he has employed whether all the morbid tissue has been destroyed or not.

It is very evident, therefore, that the agent selected to cause the inflammatory reaction that is desired must be sufficiently active to occasion an inflammatory reaction of great enough intensity and extent to cause the death of all the cancer cells within the entire affected area. A less violent action will destroy only the superficially located cells that are directly affected by the escharotic action. Nay more, it will actually do harm; for it will excite in the neighboring and already invaded tissues of mild degree of irritation and inflammatory action that will directly favor the extension of the new growth. The mistake is often made of selecting agents, like silver nitrate or glacial acetic acid, which are but very mildly and superficially cauterant, and are rather a stimulant than otherwise to cell growth. Little wonder then that the practitioner, as he sees the morbid process increase under his repeated applications, gives up this so-called caustic treatment in disgust.

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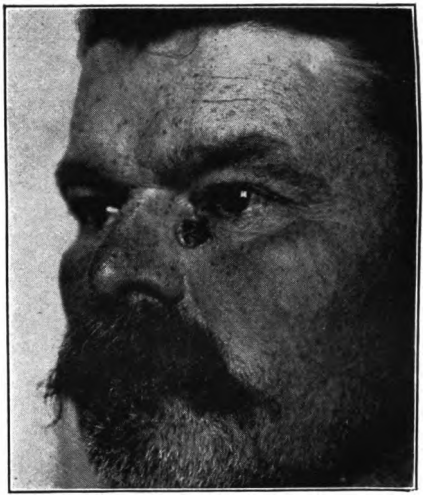

FIG. 9. Epithelioma of two years standing, before the application of the caustic paste. From photograph by the Author.

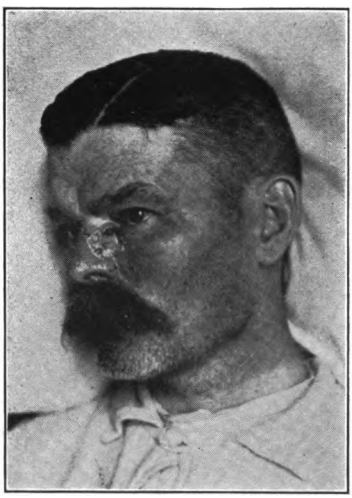

FIG. 10. The same case (Fig. 9) two weeks later, after separation of the slough, and showing the full extent of the cancerous infiltration. From photograph by the Author.

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On the other hand the agent selected must not be sufficiently severe to destroy all the tissues, normal and abnormal alike. Such means have their place in certain cases, as will be seen below; but their effect is that of ablation or excision, and their employment must be governed by the rules that apply to these latter.

It is the want of appreciation of these factors, and the non-fulfillment of these requirements that has led to the very general disrepute into which the caustic treatment has fallen, and which has caused a very appropriate and effective therapeutic procedure to fall so largely into improper hands. In running over the various local measures that have been employed, I shall mention several of them briefly as unworthy of reliance for the cure of cancer of the skin. Others have a limited application in selected cases; and some again, insufficient of themselves, are useful only as preparatory measures before the application of more deep-reaching remedies.

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CHAPTER VII.

THE TREATMENT OF CANCER OF THE SKIN.—(Cont.)

I. GENERAL AGENTS AND SOME SPECIAL METHODS—THE SERUM TREATMENT.

The toxins of the erysipelas organism and of the bacillus prodigiosus have been used by Coley, Moore, and others in the treatment of carcinomata of the skin, being especially recommended for cases unsuited to other methods on account of their location or the depth of the tissues involved. Happel has employed them in epitheliomata of the face. The local and general reaction from the injection of these substances has been marked in some cases; but their effect has been more than doubtful. As remedies for cancer of the skin they have not proven effective, and I do not consider further experimentation with them in this direction warranted.

2. THYROID EXTRACT.

This has been used up to 15 grains daily in some cases; Page and Bishop claim to have cured a recurrent carcinoma of the breast by its means. It has been employed in a few cases of skin cancer, but without results, so far as I am aware.

3. THE KNIFE.

For the reasons already stated surgical procedure in its stricter and more limited sense is not the best

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treatment for the great majority of skin cancers. Nevertheless there are certain cases in which it may be well to employ it. Ablation or excision may be desirable in small epitheliomata or rodent ulcers of the prepuce, clitoris, lip, ear, or other places where the conditions are such that removal of a sufficiently large amount of the surrounding tissue to afford security against relapse can be done without causing much deformity or disability. In far advanced cases also, where the deeper tissues are already involved, amputation of the part affected or removal of all the structures involved may be the best thing to be done. But as my experience with these cases increases I find fewer and fewer of them in which I recommend the knife. All the smaller and younger growths, even when located at the natural orifices of the body or on the mucosæ, are better treated by other methods. And for advanced cases we have in the newer radiotherapy treatment that is at least hopeful.

Ablation or excision, if decided on, are ordinary surgical procedures, into the details of which I shall not go here. It may be mentioned, however, that it is the practice of some very competent authorities to subject the patient to one or more courses of X-ray treatment after cicatrisation of the operative wound is complete, with the idea of causing the atrophy and disappearance of any outlying carcinomatous foci that may not have been included in the original removal.

4. THE SHARP CURETTE.

Curetting is still the favorite treatment of many Continental dermatologists; but it was never in great favor here, and it has been largely abandoned on account of the impossibility of removing all the cancerous

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growth by its means. It is not a radical measure, since it is impossible for the operator to determine the exact extent of the new growth, and no matter how small the curettes that are used, it is hopeless to attempt to reach all the outlying foci by their means. The mechanical injury to the healthy tissues as well as to any disease elements that may have been left behind is not sufficiently severe to cause necrobiotic inflammation; in fact the operation seems to stimulate the epithelial cells to increased growth.

Curetting is useful, however, in its place; and its place is as a preliminary to other measures and to increase their rapidity and thoroughness. In the hypertrophic epitheliomata, those we so often see with the ulcerated area covered with masses of exuberant granulations, large amounts of the soft and partly broken down neoplastic matter can be curetted away with ease, and with the causation of but very little pain. Hardened and crusted matter can be removed at once, and the resistent epithelium covering the surface of the growth can be scraped off.

I almost invariably employ the curette as a preliminary measure, before proceeding to the radical treatment. In most cases not even local anæsthesia is required; a few hard rapid strokes of the curette, hardly taking more time than would be required for a simple incision, is sufficient. It is best done at the same time that the other measures are employed, a simple compress being kept applied until the oozing stops. If the patient is especially sensitive a few drops of a 4 % cocaine or eucaine solution can be injected into the base of the tumor mass before scraping; the mere external application of the local anæsthetic is not enough. Freezing with the ethyl chloride spray is not suitable, since it makes the softened pathological

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tissues so hard that it is impossible to appreciate the difference between them and the normal structures.

Whatever method therefore, other than excision, is employed, it is useful to begin the treatment with a vigorous curetting. Large masses of diseased tissue are removed at once, and the way is opened for the effective action of the cauterant to be subsequently used upon the deeper tissues. This greatly shortens the time required for inflammatory destruction and cure.

5. THE THERMO OR GALVANO CAUTERY.

This may be used in the form of the ordinary Paquelin with a very small platinum tip; but the points heated with the galvanic battery are more manageable and are to be preferred. The ordinary handles, however, are too large and clumsy for delicate work about the face; and the usual long cautery points, designed especially for nose and throat work, are too long. I append an illustration of a cautery that I devised for delicate work some years ago, and which has done me very good service. The shaft is four inches long, light, and shaped exactly like a carpenter's lead pencil. It is to be held like a pen, the contact button being under the forefinger on top, and the base and outer side of the hand resting on the patient's skin. The beaks into which the cautery wires are clamped with two very small set screws are only three-quarters of an inch in length; and the knives themselves are made extemporaneously out of small lengths of irido-platinum wire, which can be bent into any desired shape, or hammered flat at the edge when red hot. Thus knives and curettes of any desired shape and length can be readily made; and the whole cautery can be held and used with the ease and accuracy of a pen.

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Much that I have said of the curette holds true of the actual cautery as a treatment for cutaneous cancers. It is useful, like the curette, as a preparatory measure; and more especially in the papillary and hypertrophic forms of the disease it can be employed in the form of the galvano-caustic loop to rapidly remove the larger masses of diseased tissue. With the knife and the curette, however, it has the disadvantage of destroying healthy with diseased tissue. The operator has no means of judging as to how far the cauterisation should extend; and it is not surprising that relapses should be frequent when it has been used.

There is, however, a field in which it is useful. Growths situated in places where there is danger of absorption of poisonous caustics by the mucosæ, or of injury to important organs if too much inflammatory reaction occurs, may be treated with the cautery. Thus it may be employed at the ocular canthi, or on the buccal mucous membrane, or on the glans penis. The pain caused by the galvano-caustic point is comparatively small and evanescent, and a good cicatrix is usually left when the reluctant eschar falls off. Local anæsthesia, but naturally not by freezing, can be used. As the actual remedial agency I employ the cautery only in very exceptional cases, more especially since we have the radiotherapeutic measures for the carcinomata that cannot be well treated by the selective cauterants.

6. ELECTROLYSIS.

This has been recommended by Inglis Parsons and others, and I have used it in some small growths situated near the eye and upon the mucosæ. It has long

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been employed to advantage in non-malignant growths such as xanthomata, nævi, and senile warts. In these, however, destruction of the visible tumor is all that is required; no harm is done if a small portion of the growth is left behind, for the worst than can result is that a repetition of the procedure on a smaller scale may be required at some future time. It is different, however, with carcinomata, where no method in which any portion of the growth may be overlooked is admissible. In none of the few cases in which I have used it have I been able to ascertain any facts as to the permanency of the cures. Recurrence would not surprise me, however; for all the objections to the use of the knife or the actual cautery apply to this method also.

The procedure is very simple. A galvanic current of from 3 to 10 milliamperes, or if that instrument of precision is not available, one that causes no more burning pain than the patient can comfortably bear, is employed. A fine needle, best of one of the ordinary fine broaches employed by watchmakers and held in a suitable handle, is attached to the negative pole of the battery. It is then plunged into the base of the tumor so as to transfix it. To the positive pole is attached the ordinary sponge electrode, well wetted, which the patient holds by the handle till all is ready for the passage of the current. On signal the patient completes the circuit by pressing the sponge electrode against the palm of his other hand. This is more convenient than attaching the positive electrode to any part of the patient's body, since in that case the current must be turned on by the operator by a switch whilst he is holding the needle in place. Under no circumstances must the needle be introduced after the current is turned on; it causes needless pain and

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shock. A vigorous bubbling at the point where the needle has entered the skin shows that the correct polarity has been used and that chemical decomposition is going on. If the positive pole has been attached to the needle by mistake, hydrogen formation and bubbling do not occur; instead of that the needle suffers disintegration and black iron is deposited on the skin, causing a very undesirable and permanent tattooing. A ready way of determining polarity is to immerse both electrodes in a glass of water for a few seconds; hydrogen bubbles will form on the negative one, and the short circuiting for so brief a time will do no harm.

The current is passed for a few minutes, until the blanching of the surrounding tissues shows that there has been destruction enough. Then the growth is transfixed through its base in various other directions and the same process repeated, until the blood supply is cut off. The cancerous nodule swells up and turns white from the accumulation of the gases of decomposition in the superficial tissues. In a few days it becomes black and drops off.

7. CATAPHORESIS.

This has not been used to any great extent in the treatment of cancers of the skin, and will receive but brief consideration. Betton Massey advocates the employment of cataphoresis to diffuse the nascent oxychlorides of mercury and zinc through the cancerous tissues. Zinc or gold electrodes amalgamated with mercury and attached to the positive pole of the battery are introduced into the tumor, and a considerable milliamperage is employed to diffuse the active agents. The method requires special and expensive apparatus,

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FIG. 11. Epithelioma of the nape of the neck. Necrobious of the Cancerous tissue after the application of the arsenical paste. (See Case 1, page 80). From photograph by the Author.

FIG. 12. Same case as Fig. 11. One week later; extrusion of the dead cancerous mass. From photograph by the Author.

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and at least local and usually general anæsthesia; it is therefore hardly suitable for the general practitioner. Cataphoresis used in the ordinary way, the agent to be introduced being applied to the surface on an absorbent electrode, has been advocated many times, but has been found ineffective.

8. RADIOTHERAPY.

The X-ray has now been employed for a sufficiently long time to enable us to form some sort of judgment as to its efficacy in the class of diseases under consideration. The enthusiasm with which this method of treatment was received has led to its employment in all sorts of cases, in but too many instances to the damage rather than to the benefit of the patient. Cures that were not permanent and records of cases not properly diagnosed have filled our medical journals. Little has been said of the failures; these come to our dermatological clinics, and to the skin wards of our hospitals, and so also do the cases that have been injured by this uncertain and little understood agent.

For it must be recognized at the outset that serious and permanent damage can be done by the X-ray. Leaving entirely out of consideration the systemic dangers from the diffusion through the body of the morbid elements of their products that has already led to the disuse of the method by careful men in sarcoma or carcinoma of the internal organs, and the direct causation of cancerous degeneration that has been ascribed to it, I shall confine myself to the dangers of its use as a dermatotherapeutic agent. I have seen deep seated and perfectly intractable inflammation affecting the tendons and bones of a hand that had been exposed but once to the rays after a slight injury, and

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finally necessitating amputation. I have seen many very serious burns, taking months to heal, and leading to permanent deformity and disability. I regard the X-ray as a dangerous agent, save in skilled hands, and as by no means an invariably safe one even then.

Nevertheless, the question before us is not so much whether harm can be done by the agent; that may happen with any method that is improperly employed. The main question is, Can cancer of the skin be permanently cured with the X-ray? And if this is answered in the affirmative the further question as to whether it can be used with safety arises.

To the first question a qualified answer only can be given at the present time. Cases are on record from competent observers in which the diagnosis is beyond doubt, and in which there have apparently been cures. That many cases have been markedly benefited is beyond doubt. Yet it must not be forgotten that with the more superficial forms of cancer of the skin, the rodent ulcers and the flat epitheliomata, there occur long periods of quiescence during which the heterogenous cells seem not to proliferate at all. I have two such cases under observation now, in which the superficial ulcerations have healed and the patients believe that they are cured; but I more than suspect the very slight nodular infiltration that is left in both cases, and I believe that the cure will not be permanent. And I can safely say that the great majority of the so-called cures that I have seen during the past few years have not been cures at all; the disease was still present.

Granting then that some cases have been permanently and many temporarily cured and improved, can the X-ray be so used as to be a reasonably safe agent in ordinary hands? To this question I can also answer only with a reservation. I cannot enter here into the

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details of radio-praxis; for these the reader is referred to the various text-books on the subject. But I can emphasize the necessity of using the modern lead-glass guarded tubes, which permit the effective rays to impinge only on the part to be treated, of employing all the tin-foil and other protectives of the neighboring structures, and of watching the patient closely and stopping the treatment at once on the advent of the first sign of threatened reaction. With these precautions the X-ray may be employed.

Now as to the class of cases in which it is to be used, it must not be lost sight of that we have numerous other methods of treating skin cancers at our disposal, many of which have stood the test of time, have long given and are still giving perfect results, are quicker, cheaper, and easier, and do not require the expensive paraphernalia of the X-ray. It is absurd to my mind to treat a rodent ulcer of the forehead or scalp, or an epithelioma of the ear, or neck, or cheek, with the X-ray; that is to say if we are honest practitioners of medicine and aim to cure our patients safely, quickly, and pleasantly. It is more than improper to subject such a patient to the long and tedious treatment, to possible and very real dangers, and to the uncertainty as to ultimate results, when we have other easy, rapid, and effective methods at our disposal.

What then is the field of the X-ray in the treatment of cutaneous carcinomata? Evidently a restricted one. It should not be used in any case that can be as well or better treated by other methods; and the great majority of the cases belong to this class. Yet in certain cases it is our only or our best resource. In carcinomata affecting the eyelids, for instant, the choice lies between the X-ray and extensive and deforming plastic work, and the balance is in favor of the first men-

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tioned method. Where there are numerous cancerous foci, as in the degenerating warts on the faces of aged persons, it may not be practical to employ the destructive measures advocated below for various reasons, and the X-ray can be used. In far advanced cases, where the deeper tissues have been invaded, it may be the only thing to do; and also in relapses. To sum up the entire matter so far as our present knowledge permits, the Rœntgen ray is a therapeutic agent that may improve and possibly cure cutaneous cancer; but it has serious disadvantages and dangers, and is to be employed only in cases that are not amenable to treatment by other methods.

9. THE HIGH TENSION CURRENT.

The high tension current, applied by means of the ordinary glass vacuum electrode, has not, so far as I know, any especial effect upon accumulations of cancer cells in the skin. Applied by means of a pointed carbon or metal electrode it has a cauterising action that is fairly deep and extended. It may be possible by this means to destroy small carcinomatous nodules in the skin. But my experience is that patients find it very painful, more so than the actual cautery; and it has the disadvantages of this latter in that it is impossible for the operator to tell how far or how deeply he should make its action extend. I cannot repeat too often that any method which leaves the determination of the limits of the diseased tissue to the physician is distinctly inferior to those in which this is decided by the tissue reactions themselves.

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10. RADIUM.

I advert to this method of treatment for the sake of completeness, since it does not seem likely to be available for general use. Radium bromide is so inordinately expensive and limited in its field of usefulness that even specialists do not employ it. Whilst we are not yet able to formulate a definite judgment as to its efficacy, it is apparent already that the criticisms of the X-ray as a means of treating skin cancer apply here also, and there are additional contraindications to its use. It is as uncertain in its effect as the former; the records of cures are as unreliable, for I have myself seen "cured" cases in which I was convinced the disease was still present; and it seems to be just as liable to damage healthy as diseased tissues. Most of the cases that I have seen treated with radium could be far better treated by other methods. Whilst I would not be understood as saying that radium may not eventually, like the X-ray, be of use in exceptional cases, it is entirely unsuited for general practice.

11. THE ANILINES.

The use of blue pyoctanin and methyl blue has been recommended by Von Mosetig-Moorhof, Darier, Myer, Boldt, and others in inoperable carcinomata, and Dubarry, Du Castel, and Stack have employed them in the more superficial forms, but only with palliative results. Wolff claims to have cured a case of skin cancer by this means. It certainly cannot be recommended for cases that can be treated by other and more radical measures, though it may be of some use in certain advanced cases. The softer portions of the growth or ulceration is first removed with the curette or with

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the galvano-cautery, the lesion well cocainised, and the following applied:

R.

Methylene blue .....15 grains
Alcohol, } aa.....75 drops
Glycerine, }

followed by a collodion dressing.

Very superficial rodent ulcers have been treated with the pyoctanin pencil (the ordinary anilin pencil of commerce) or with a 2% pyoctanin powder. In the deeper seated forms methylene blue can be employed hypodermically in 2 to 10% solution in distilled water. The exact amount employed does not seem to be important; several cubic centimeters may be used at one time, increasing doses up to 30 grains being given. The injections into the cancerous mass should, of course, be made under strict aseptic precautions, the liquid being thrown in various directions into the tumor, till all the tissues are bluish. The needles should be long, straight or curved, and of not too small calibre. When the amount of the drug used is large the urine turns blue; but it soon gets normal again.

The action of the dyes is absolutely local, and I do not believe that it is in any sense selective. The treatment seems to relieve pain, and to have some deterrent effect on the progress of the neoplastic growth. But it is no way a radical treatment for cutaneous carcinomata. It may possibly be useful in recurrences after the employment of other methods.

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CHAPTER VIII.

THE TREATMENT OF SKIN CANCERS.—(Cont.)

NON-SELECTIVE CAUTERANTS.

12. INTERSTITIAL ALCOHOL INJECTIONS.

The injection of 30 to 50% alcohol for the cure of carcinoma was proposed long ago by Schwalbe and Hasse, and it has been employed by Kuh and others in carcinomata of the mouth and the nasopharyngeal and other muscosæ. The theory of its use was that the irritation it occasioned caused the formation of zones of connective tissue round each injection site; and that the subsequent contraction of this new connective tissue constricted the blood and lymph vessels and so gradually cut off the nutritive supply of the tumor tissue. The method has been used in different manners by its various advocates. Some of them transfix the base of the tumor in various directions, injecting a small amount of the dilute alcohol, 3 to 10 drops, at each insertion of the needle. Others make but one or two insertions, throwing as much as 30 drops into the tissues at one place. Absolute alcohol has been used in some cases. The injections are made once or twice a week. Besides the ordinary precautions to be employed when making an injection, care must be taken to avoid throwing of the alcohol into the venous circulation. Transfixing a vein is of no importance; we know that it has occurred when there is oozing of blood after the operation. But if the needle has been

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accidentally introduced into the length of a vein unpleasant symptoms may occur. It is therefore important, after inserting the needle, to disconnect the syringe from it before making the injection, and watch the lumen of the cap. If the fluid of the injection or blood begins to come out, showing the existence of direct communication with the circulation, the needle should be withdrawn and the injection made in another location.

I do not recommend this method for various reasons. Chief among them is the fact that it is almost impossible to gauge the exact strength of the alcohol to be employed. If it is used too weak the fluid is simply absorbed without causing the desired reaction and connective tissue formation. If it is too strong sloughing may occur; I have seen this happen, resulting in extensive loss of tissue and considerable deformity. Since most of the lesions that come to us are on the exposed parts of the body, such a result is very unfortunate. Nevertheless there may be a field for it in exceptional cases, as in relapses after the employment of other methods, inoperable cases, or those situated where sloughing would not matter much.

We now come to the strictly chemical caustics, the most important and generally applicable of the means at our disposal for the radical treatment of cutaneous carcinomata. A long list of them has been used and recommended. Some of them are our very best remedies for the conditions in question; most of them are valuable under certain conditions; and one or two remedies usually classed under this heading are entirely valueless.

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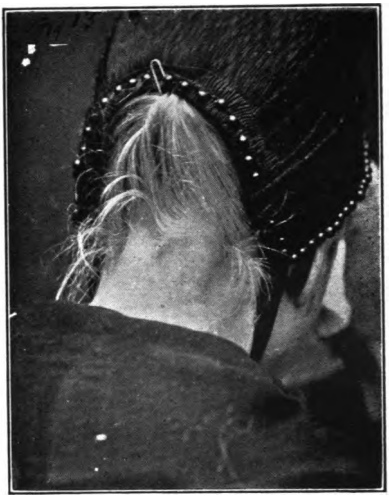

FIG. 13. Resultant scar in Case 1. (See Figs. 11 and 12). Photographed by the Author four years after removal of the new growth.

FIG. 14. Fungating Epithelioma; Necrobiosis after two days' application of the arsenical paste.

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13. NITRATE OF SILVER.

This is mentioned only to condemn it. It is unfortunate that the drug bears the name of lunar caustic, for that I think is responsible for its reputation as a destructive agent in both lay and professional circles. It causes immediate coagulation of the albuminous elements of the superficial layer of cells with which it comes in contact when first applied; and a superficial but tough layer of albuminate of silver is formed that effectually stops all further action of the drug. It has absolutely no penetrative power, and is quite devoid of any of the selective power that is desirable in an agent that is to act upon the tumor growth. In fact, even in its pure form it is a stimulant rather than a caustic; and it is a most efficient agent to do the very thing that we least desire, excite the epithelial cells to renewed and more vigorous growth. Yet it is usually the first agent that the practitioner has recourse to when consulted for an epithelioma or a rodent ulcer. Incalculable damage has been done, and is still being done daily to patients suffering from cutaneous cancer, and innumerable superficial cases are hurried on to more rapid and more malignant growth by being repeatedly "touched up" with this so-called caustic. It is far better to do nothing for your cancer than to make it worse.

14. SALICYLIC ACID.

The local action of this drug, even when used pure, is hardly cauterant at all; but it finds a place in the treatment of cutaneous cancer in preparing the tissues for the action of other agents. It will to some extent effect exactly what the curette does, and it may be employed in its place to soften and remove hardened

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masses of neoplastic tissue, and to macerate the unbroken epidermis over the surface of the tumor. Where the patient dreads the preliminary use of the curette a strong salicylic acid ointment or plaster may be used as a preliminary measure. I would emphasize the word strong; for the acid in low concentrations is stimulant and keratoplastic rather than destructive and keratolytic, and simply increases the thickness, and therefore the strength and resistance of the superficial epidermic layers. A 25% paste is the mildest that should be used, and a 50% one can be employed. Subjoined is my usual formula:

℞.

Acid Salicylic ..... 1 part.
Lanoline, } aa..... 1 part.
Petrolati, }

This is to be applied for a number of days, followed by hot fomentations to promote the removal of the swollen and macerated epidermic and neoplastic tissue.

15. LACTIC ACID.

In paste form this drug has been highly recommended by Bloom, who has used it in a considerable number of cases of carcinoma of the skin with good results. It is a feeble caustic, however, even in its pure state, and the objections to its employment are the same as those to nitrate of silver. It acts rather as an irritant and a stimulant than as a destructive agent; I do not think that it deserves any consideration as a remedy for the eradication of skin cancer.

16. MONOCHLORACETIC AND TRICHLORACETIC ACIDS.

These are more powerful cauterants than the chemical agents heretofore considered; the trichloracetic be-

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ing of course much the stronger of the two. They are in no sense selective caustics; they destroy healthy as well as diseased tissues within their range of action. This range is by no means, however, an extensive one; and this quality, together with the great facility with which they can be managed, render them suitable for use in certain selected cases. When the most superficial forms of rodent ulcer are seated on the eyelids, or close to the canthi, or on the lips, or on the thin skin covering the cartilaginous tip of the nose, these acetic acids may be employed.

They are to be applied to the affected area by means of a small, closely wrapped cotton swab once only. A white eschar forms immediately, which turns black in a few days, and drops off in about two weeks. The pain occasioned is rather severe for a few minutes, but it soon ceases, and I have not found even local anæsthetic measures necessary. An alkaline solution may be used to neutralize the caustic when it has acted sufficiently, but even women stand the caustic well. The surface is usually found entirely healed when the scab falls.

The trichloracetic acid is more powerful and deeper reaching in its action than the monochloracetic acid, and is the one that I prefer. It is a superficial caustic at the best, however, and must be used with a full appreciation of the uncertainty of its radical action, and only in cases that for one reason or another are not suited to the use of more certain methods.

17. SODIUM ETHYLATE.

This drug has recently been used for epithelioma, the surface being first thoroughly cleansed with dilute peroxide and then anæsthetised as far as possible by

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the application of a tampon soaked in a strong cocaine solution. The full strength deliquesced crystals of sodium ethylate is then applied by means of a small applicator. The treated tissue turns black; a boric acid wet dressing is applied until the slough separates. The application is exceedingly painful, and this does not seem to be much mitigated by the cocaine. It is indiscriminate in its action, and is open to all the objections inherent in this class of destructive agents. On the whole I cannot recommend it as a therapeutic method.

18. UNSLACKED LIME.

Like some of the methods mentioned here, it is recorded only to condemn it. Calcium carbide in powder is applied to the surface to be treated; water is then added, and quicklime is formed. It is a dangerous method in various ways. The gas form is explosive; and the destructive action is very extensive and uncontrollable.

19. FORMALIN.

Formalin has been used by Engman and Ravogli with success. Engman first removes the horny layer covering the growth with a 20% salicylic acid plaster or salicylic acid in flexible collodion (1 to 8), which is kept applied for several days. Then very hot water fomentations are used to help the removal of the homogenised epidermis; the part is dried, and all fat thoroughly removed from it with benzine. Then pure formalin is applied to the growth, followed by a dressing of 1% carbolised vaseline. Preliminary cocainisation mitigates the pain of the application to some extent.

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Ravogli uses a paste composed of equal parts of creta preparata and zinc oxide, with formalin added enough to make a paste. This, of course, is much weaker than the pure formalin, and must be kept applied for some time. I have no experience with either of these methods. Formalin is a very painful caustic when used in full strength, and is of course indiscriminately destructive to the tissues to which it is applied. We possess other and more manageable agents.

20. SULPHURIC ACID.

This is an active and powerful destructive agent; but extremely painful, and its action spreads very quickly to the surrounding tissues. It is an unmanageable caustic, even with the aid of an alkaline solution to neutralise it, destroys all the tissues within its reach, and therefore is not to be recommended.

21. NITRIC ACID.

This is a much better caustic than sulphuric acid, almost as effective, more limited in its action, and causing less severe pain. The chemically pure acid may be applied to the entire surface, including the skin at the edges of the growth, by means of a glass rod. The area is then covered with a sterilized dressing kept in place with collodion or with plaster strips. This may be left on for a week; at the end of which time the slough will be found to be loose. It is removed, and a bichloride wet dressing applied, followed by zinc oxide ointment when granulation is well under way.

Nitric acid can be used for the cure of the smaller epitheliomata in the immediate neighborhood of im-

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portant organs, as the eye, on the mucous border of the lips, &c. It is fairly manageable, and not extremely painful; but the cases in which it is indicated are quite exceptional.

22. THE ACID NITRATE OF MERCURY.

This may be used pure, and then forms a caustic very similar in its range and action to nitric acid itself. Sherwell has recommended it in 50% solution. After a preliminary curetting of the growth it is applied on a pledget of cotton and allowed to remain in place 5 to 30 minutes. If the action seems too intense the acid nitrate may be neutralized with bicarbonate of soda solution. The black eschar takes 8 to 15 days to come off. The process may have to be repeated more than once.

23. CHLORIDE OF ZINC.

This caustic has been extensively employed in the treatment of epithelioma, either as a stick, or powdered, or made up into a paste with flour. It is effective, but very painful. The addition of 5 to 20% of cocaine obviates this latter to some extent; but chloride of zinc is always a painful caustic. It has no selective action, and therefore the operator must decide upon the extent to which it shall be applied; it forms an aseptic slough, and there is but little liability to hemorrhage or constitutional poisoning from its use. In certain locations, as upon the mucosae, it can be used in the shape of a pointed stick and bored into the cancerous tissues repeatedly. In Paget's disease of the nipple, Crocker recommends the following to be applied on compresses:

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R.

Zinc Chlorid. .....1 part.
Liq. opii sedat. .....1 part.
Amyli ....1 part.
Aquae ....2 parts.

Zinc chloride forms a part of Bougard's paste, which will be considered under the heading of the arsenious acid that is its most important constituent. In whatever form it is used, it must be applied well over the borders as well to the center of the affected area. It destroys a depth of tissue two or three times the thickness of the layer of paste applied. The inflammatory reaction is marked; and it is left in place one or two days. The necrosed tissue can then be removed with the curette, which is painless, and a fresh application made if it is deemed necessary. A wet dressing or a poultice is then used to promote the casting off of the dead tissue, and a boric acid ointment applied until cicatrisation is completed.

24. CAUSTIC POTASH.

This is one of the most effective and far-reaching cauterisants that we can employ; its action extends deeply into the healthy tissues, which it liquefies and thoroughly destroys. It is rapid in its action, and very thorough; one application properly made usually suffices to destroy all the cancerous tissue in sight. It may be used in the form of potassa fusa, the pointed stick being bored repeatedly into the cancerous and surrounding tissues; or a strong solution can be applied by means of a glass rod. This latter method has the advantage that the operator can, as it were, feel his way in making the application, the greater resistance

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of the healthy tissues as compared with the diseased elements being readily palpable. As the action of the caustic is very diffusive, the surrounding skin, upon which it is not desired to act, should be protected with a layer of vaseline. Dilute acetic acid should be kept ready, to be applied as soon as sufficient cauterisation has been obtained.

Caustic potash is an indifferent caustic and must be used with care, since its action is liable to extend beyond the limits of the tissue to which it is applied. The pain it occasions is not very great or very long continued. It is very valuable in certain cases. Where the patient cannot remain under observation, and where an immediate and effective action is required it may be employed. It is also in place where absorption of a poisonous application is feared, as near to or upon the mucous membranes. Small beginning epitheliomata, or naevi and senile warts that are just commencing to undergo carcinomatous degeneration, in which the limits of the malignant infiltration are well defined, can often be cured with a single application of the caustic. It is not suitable, however, for the more extensive lesions, or those that have already penetrated into the depths of the tissues.

Good results have been lately recorded by Hubbard from the injection of pure liquor potassae in drop doses by means of the hypodermic syringe. It is practically an interstitial application of the caustic potash, and is especially applicable to cancers of the mucosae. A slough forms which, when it falls, leaves a clean and healthy ulceration behind that readily heals. This is a method well worth employing in cases where the galvano-caustic point or the knife is rejected.

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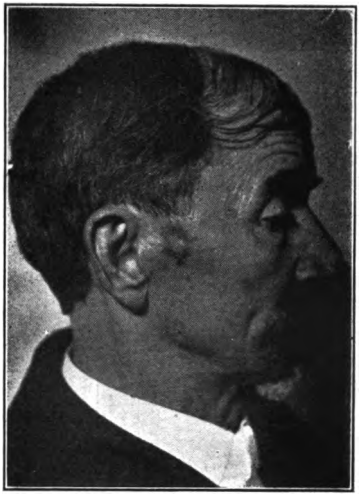

FIG. 15. Same case as Fig. 14, showing resultant cicatrix. Photograph by the Author one month later.

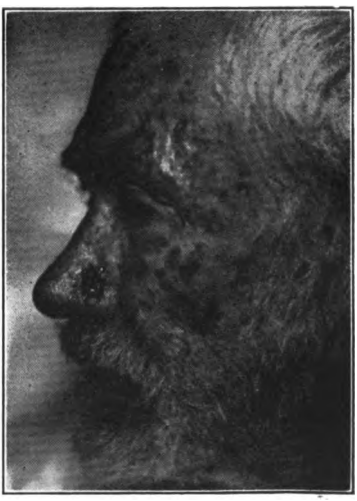

FIG. 16. Raspberry-like Epithelioma; treated by curetting and arsenical paste in the City Hospital. Photographed by the Author.

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CHAPTER IX.

Treatment of Skin Cancers.—Continued

THE SELECTIVE CAUSTICS.

Two agents only deserve mention under this heading; but one of them is the best treatment of all, and the one that I commonly employ.

25. PYROGALLOL.

Pyrogallic acid, first recommended by Jarisch and Kaposi, has been quite extensively employed in the treatment of rodent ulcer and superficial epithelioma, and with a considerable amount of success. It is claimed that it is a painless caustic; and it certainly is practically painless; but there is a good deal of difference of opinion as to its value as an escharotic. It is certainly a very feeble one, and probably a very uncertain one also. It is very slow in its action, requiring to be applied for from ten days to three weeks for satisfactory results; and it frequently has to be reapplied a second or third time.

Pyrogallol may be used as a powder diluted with an inert substance, or as an ointment. The subjoined formula containing some salicylic acid, is appropriate:

R.

Acid Salicylic ..... 1 part.
Pyrogalloli ..... 10 parts.
Petrolati ..... 30 parts.

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This makes a 33% ointment. The salicylic acid increases the efficiency of the pyrogallol by softening and macerating the unbroken epidermis for its action; but a preliminary curetting is still better. The salve is spread evenly and thickly on a piece of lint larger than the visibly affected area, and the application kept in place with adhesive strips. The dressing should be renewed daily. In a few days there is a certain amount of superficial sloughing; the dead tissue is removed as far as possible, and the pyrogallol reapplied. When it is judged that enough destruction has taken place a poultice or a wet dressing may be used to hasten the separation of the slough, and then a boric acid ointment applied until healing is complete.

Pyrogallol is to a certain extent a selective caustic; it does not destroy sound tissues. It is usually painless or nearly so; for very sensitive patients 1 to 2% of cocaine can be added to the formula above given. But it is entirely too superficial in its action for most cases; it takes a long time and the application must often be made repeatedly. For very sensitive patients, or in the very aged, it may be employed. But I cannot recommend it for general use in the eradication of cancer.

26. ARSENIOUS ACID.

This is the cauterant of election in all cases of cutaneous carcinoma in which treatment with an agent of this kind is desirable; and it is so desirable, as I have stated above, in the great majority of all cases. As with other therapeutic agents, the limits of its applicability depend to a very great extent upon our familiarity with its action. Those unused to it fear all manner of ill effects from its employment. Those

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who have employed it for years, as I have, have learned to regard it as the safest as well as the most certain of all the means at our disposal for the treatment of cutaneous cancer.

More than any other agent with which we are acquainted, arsenic seems to possess that selective action that is so desirable in an agent of this kind Properly employed, it seems to excite just that degree of inflammation that is required to occasion the breaking down of the neoplastic tissues. Properly employed also, it does not cause destruction of the healthy cells. In a very extensive experience with the agent I have yet to see a case in which unnecessary or too extensive destruction of tissue has been occasioned.

In addition to this it is the most certain of our cauterising agents. Better than any other the inflammation that it occasions searches out and involves in the necrobiotic process all those outlying arms, projections, and nests of cells that are so very liable to be left behind by methods of destruction the limits of whose range of application are necessarily determined by the operator. And here I must call attention again to the rationale of the operation of arsenious acid in cutaneous cancer. It is not as a directly destructive agent that it is employed; it has this effect to a considerable degree, but we have other chemical and mechanical agents that for this purpose are far more efficacious. It is employed because, when used in proper strength, it causes a deep and far reaching inflammatory reaction in the neighboring parts as well as in the tissues with which it is in direct contact; and because this inflammatory reaction can be so gauged and regulated as to be of sufficient intensity to inevitably cause necrobiosis in the neoplastic cell masses, and at the same time not great enough to exceed the resist-

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ant powers of the healthy epithelia. The only other agent with which intensity of reaction can be thus regulated is pyrogallol; and with this, as we have seen, the difficulty is that sufficient intensity of effect is unobtainable.

Safety, however, is as important a factor in estimating the value of a mode of treatment as efficiency; and whenever in my lectures I mention the use of arsenious acid as a cauterising agent the question is asked "What about the danger of absorption and poisoning?" The answer is ready: "There is practically none." Though I have used the application on epitheliomata, covering half the forehead, I have never seen any trouble from this source. One previso, however, must be made. The essence of the treatment that I advocate lies in the production of an intense reactive inflammation; and tissues in this condition do not absorb the arsenic. The over-caution that leads to the employment of weak concentrations of the drug, or its use in diluter solution, as in a method to be noticed shortly, are the only conditions in which absorption is to be feared.

One great advantage of the arsenical treatment is the nature of the scar that it leaves behind. It is peculiarly thin, skin-like, and inconspicuous. Often it is almost invisible. I have at this moment in my skin ward at the City Hospital a patient, a permanent municipal pensioner for other reasons, from the side of whose nose I removed a fungating epithelioma over half an inch in surface size some four years ago. When I ask the students to find the place, they fail entirely in most cases. It takes close and careful inspection to determine it.

Again, treatment with arsenic is the most certain means at our disposal for the eradication of skin cancer. It is more certain than excision, the actual cau-

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tery, or the indeterminate caustics. Repeated applications may, in exceptional cases, be necessary at the time of removal; but I have yet to see a case of a return in situ after its proper employment.

Finally, the treatment is not painful to any great degree. There is, of course, a certain amount of burning and stinging whilst the application is acting, and the swelling and tension of the surrounding parts causes discomfort. But the actual pain does not amount to much. Many patients, including women, complain but little of it; they even sleep during the night that the application is in place. Sensitive patients complain of the pain, though it is never violent or unbearable; and in such cases I do not hesitate to give a quarter of a grain of morphine hypodermically in the evening; this always ensures a quiet night's rest. I have not gotten any benefit at all from the addition of cocaine, eucaine, orthoform, &c., to the application itself. In most cases it is quite unnecessary to do anything at all for the pain caused by the application.

Curetting, which can be done in a few seconds and painlessly with the aid of a little local cocaine or eucaine local anaesthesia, should always precede the use of the arsenic. The drug does not act well on the unbroken integument; and this should be scraped off over all the visible portions of the tumor. Large masses of exuberant granulation tissue can be removed at once, and much tedious caustic destruction be thus avoided.

All ordinary and smaller lesions can be treated as a whole, the entire surface and borders being curetted at once, and the arsenic applied to the entire area. Very extensive ulcerations must be treated in sections; two or three square inches being about the proper area to treat at one time. And I do this not on account

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of any danger of arsenical absorption, but to limit the swelling, tension, and pain. The time of treatment is slightly prolonged; but it is not necessary to await the detachment of dead cancerous tissue from one area before proceeding to the next. Thus in an epithelioma affecting two-thirds of the skin of the forehead, in a physician, I made the application in three sections; after 24 hours the action of the caustic on the first section was sufficient, and the next day I proceeded to treat the next area. Two days later I treated the third and last section; by this time the first one was well advanced in the process of extrusion of the dead tissue.

Whatever arsenical application is used, it should be applied to an area covering at least half an inch beyond the apparent limits of the disease. The carcinomatous infiltration, as I have explained, extends for an unknown distance into the tissues; and thorough cure depends upon subjecting all the area affected to the vigorous action of the arsenic.

Two points should always be made very clear to the patient before the application is made. The first is that the disease is always very much more extensive than is apparent upon the surface of the skin, that the entire mass must be removed, and that the ulceration that will be left after the slough separates will be very much more extensive than the original tumor. The other is that there will necessarily be very much swelling and oedema of the surrounding parts. If the affection is on the face near the eyes the oedema may entirely close the lids. Unless forewarned of its entire harmlessness, the patient and the patient's friends are liable to be greatly and unnecessarily alarmed.

The powdered arsenious acid is best applied in the form of a paste, for which there are various formulae,

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either alone or with addition of other caustics. I prefer the plain formula of Marsden, which I keep in the dry powdered form as a 33, 50, and 66% mixture, and prepare for use as I need it.

R.
Acid Arseniosi .....2 parts.
Pulv. gum. acaciae.....1, 2 or 3 parts.

As a rule the strongest, 66% powder is to be employed; but on sensitive locations, as the lip, and in very old people, the 50% may be used. I rarely employ the weakest strength.

Distilled water is used, at the time of application, to make a paste of the powder. Stellwagon recommends the employment of a saturated solution of cocain hydrochlorate for the purpose. I do not find that it has any noticeable analgesic effect, any more than has the addition of similar drugs to the powder itself.

Other arsenical pastes in common use are those of Cosme, Esmarch, and Bougard. Cosme's paste, as modified by Hebra, consists of:

R.
Acid arseniosi .....1 part.
Hydrarg. sulphuret. rub.....5 parts.
Ungt. aq. rosae.....40 parts.

This contains only 2% of arsenic, has to be renewed daily, and must be applied for a long time. It does not cause the requisite reaction; the danger of absorption is greater; and I mention it only to condemn it as a regular application for skin cancer.

Similar objections apply to Esmarch's paste, the formula of which is as follows:

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R.

Acid arseniosi .....1 part.
Morph. sulph. .....1 part.
Calomelani .....8 parts.
Pulv. acac. .....48 parts.

Bougard's paste is active enough; it contains corrosive sublimate as well as chloride of zinc in addition to the arsenic.

R.

Hydrarg. chlor. corr. .....1 part.
Acidi arseniosi .....2 parts.
Hydrarg. sulphuret. rubr. .....
Ammon. mur. .....a. a. 10 parts.
Farini trit. .....
Amyli .....
Zinc chlorid. cryst. .....a. a. 120 parts.

The various ingredients should be powdered separately, mixed in a mortar, and poured into a solution of the zinc chloride in water, with rapid stirring to prevent lumping. The application of the paste is precisely like that of the plain arsenical applications as described below. The objections to this paste are that it is liable to destroy healthy as well as diseased tissues, and that it contains entirely too little arsenic to get the specific action of the drug.

A solution of arsenious acid in alcohol and water has been used by Cerny and Trunecek with great success. I have not used it myself; but I mention it because it may be useful in those exceptional and hypersensitive cases in which any destructive measures are objected to on account of the possibilities of pain or very slight deformity. The formula is as follows:

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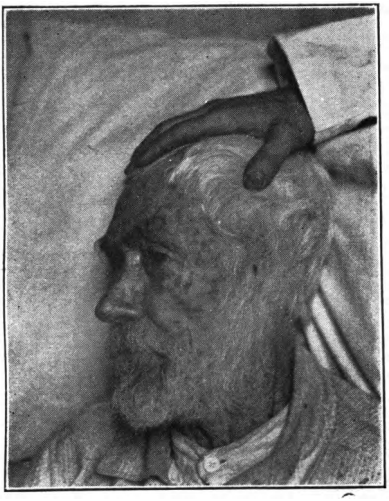

FIG. 17. Same case as in Fig. 16. Photographed by the Author one year later. Scar hardly visible.

FIG. 18. The usual result of proper caustic treatment. Photographed by the Author five years after removal of a deep epithelioma from the tip of the nose.

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R.

Acid arseniosi .....1 part.
Spts. vini rect. .....
Aq. distill. .....a. a. 75 parts.

After a preliminary curetting, or at least a thorough cleansing of the ulceration, the arsenical mixture, well shaken, is spread over its surface with a brush. It is allowed to dry on, and the part is left without any dressing. Next day the ulcer is found covered with a scab. Every day a new layer of the lotion is painted on, and the crust, gradually thickening, changes in color through the brown tints to black. The strength of the solution should be gradually increased during the later applications, till the proportion of arsenic in the mixture is 1 to 100, or even 1 to 80. The scab, composed of necrotic cancerous tissue, becomes gradually detached by suppuration, and can finally be readily removed. The arsenical solution is applied as before, and the result watched. If a thin, easily detached, yellow pellicle only is formed, it is claimed that the cancerous matter is all destroyed, and the ulcer will heal up. If, however, a dark colored, tough, and firmly adherent crust appears, the reverse is the case, and the entire course of treatment must be repeated.

This treatment takes from four weeks to three months. It is not, of course, a specific arsenic treatment of the kind that I advocate, it is tedious, and daily applications are necessary. Its advantages, its painlessness, but more especially the fact that large areas of cancerous tissue can be treated at once and that it is applicable to carcinomata of the skin involving the mucosae, and even those situated on the mucous membranes themselves. The authors of the treatment claim that it does not affect the organism even when employed in the mouth.

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Finally there remains to be mentioned the hypodermic arsenical treatment advocated by Hue. He employs the following solution:

R.

Acid arseniosi ..... 1 part.
Cocain hydrochlor. ..... 5 parts.
Aq. dist. bull. ..... 500 parts.

Several cubic centimeters are to be injected every three or four days into the cancerous tissues; it is claimed that the operation is not painful. Hue's recoveries were only "relative" ones, since his cases were all of the inoperable class. The method is mentioned only as a possible resource in cases unsuited to other methods of treatment.

Of all these various modes of employing arsenic, the one which I regularly employ, and which I unhesitatingly advocate in every case at all suited to its use is the powdered arsenious acid and gum arabic which was the first one that was considered. I use it in the following manner:

The lesion and the surrounding skin are cleansed gently; the green soap poultices, bichloride scrubbings, &c., customary before operations being as unnecessary as before the use of the actual cautery, and being liable to cause much delay on account of the obstinate capillary oozing that occurs. If the patient or the part is especially sensitive, a few drops of a 4% beta-eucaine solution is injected into various parts of the base of the mass; the site of the punctures may be first congealed with the ethyl chloride spray. All exuberant granulation tissue is rapidly removed with a small sharp curette, and the epidermis of the margins of the tumor is scraped away. The neoplastic tissue being very much softer than the normal, much of the tissue in the depths of the lesion can be removed; the in-

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creased resistance of the curette indicates very plainly the presence of normal tissue. The scraping should be rapidly done, taking but a very few seconds. A boric acid solution cotton sponge is then applied, and held firmly in place to control the capillary oozing; this usually takes from ten to fifteen minutes.

When the oozing has stopped the paste may be prepared. By means of a spatula and a glass or porcelain plate the powder is made into a paste with distilled water. It should be rubbed up until it is smooth; and it should be as stiff as possible, the smallest admissible amount of water being employed. There will inevitably be some serous oozing from the lesion during the first few hours that the paste is applied, and this will tend to liquefy it and keep it soft. It is spread thickly on a piece of sheet lint larger than the lesion all around, applied to the denuded surface as soon as the hemorrhage has ceased, and secured in place by zinc oxide strips or a bandage.

If the lesion treated is near the eye, or on the forehead or brow just over it, that organ must be sealed and protected from the possibility of the liquefied arsenical paste reaching it. The lids can be sealed with sterile cotton and collodion; and it may be necessary for the patient to pass the night sleeping in an armchair if the position of the lesion is such that the material from the application may reach the eye in the recumbent position. A little morphine hypodermically may be needed at night by especially sensitive patients.

The paste is allowed to remain in situ for from 18 to 36 hours. Of this the physician must judge; and the lesion should be inspected every eight hours or so to determine this. Cases in public practise, therefore, and others so situated that the requisite supervision cannot be effected, should be treated in the hos-

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pital for the first two or three days. The slough formed is yellowish-brown at first; the surrounding tissues becoming markedly red and oedematous.

If it seems evident after the second or third inspection, that the action of the caustic has not been vigorous enough, a fresh application of the same or a more powerful paste may be made. I now usually employ the strongest, 66% paste; with the result that renewed application of the preparation is rarely necessary, and the time required is shortened.

When the destruction is deemed sufficient the paste is removed, the surface cleansed, and measures are taken to promote the extrusion of the dead material. The slough soon becomes black, and a line of demarcation forms between it and the healthy and inflamed tissues. Nothing does so well immediately after the removal of the paste as the application of an old fashioned flax-seed poultice. This should certainly be used for the first day or two; it may be continued until the slough separates; but as this process takes from 10 days to three weeks, it is more convenient to substitute an ordinary wet dressing for it in a few days. Of course the patient need only remain under close observation or in the hospital during the time that the paste is applied. After that he need be seen only occasionally, and can usually return to his ordinary habits and avocation. When the slough has entirely separated, and a clean ulceration is left, it may be allowed to heal up under boric acid or zinc oxide ointment.

In most cases a single application of the arsenical paste is all that is required. If, however, any part of the ulcer resulting from the action of the paste does not heal up readily, or if any hard nodular border or base is left behind, another application of a weaker

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paste for a shorter time must be made to the inflamed and damaged tissues that show signs of the persistence of the cancerous infiltration. I have but rarely of late years had to use the arsenical paste more than once.

RESUME OF TREATMENT.

1. Internal remedies, thyroid, the sera, &c., are entirely useless in the treatment of cutaneous carcinomata.

2. In the great majority of cases they are best treated with caustics, which give the best results with the least liability to relapse.

3. Arsenious acid is the safest, surest, and best of the caustics at our disposal and seems to have a specific selective action upon the cells of the new growth. It is the caustic of election. Pyrogallol, the only other agent with a selective action is distinctly inferior to it.

4. Skin cancers unsuitable for arsenic can be treated with zinc chloride, nitric acid, the acid nitrate of mercury, formalin, trichloracetic acid, interstitial alcohol injections, electrolysis, the knife, the cautery, or the curette, &c. All these methods are distinctly inferior to the selective arsenic method.

5 Skin cancers in which no local destructive methods can be employed must be treated with the X-ray. The results thus obtained are necessarily uncertain.

6. When the mucosae are also or alone affected caustic potash, the chloride of zinc, the trichloracetic, or the mineral acids must be used. Arsenic as interstitial injection or as a paint can also be employed.

7. Whatever treatment is selected, it must be one of the thorough and radical ones. Milder measures, such as the employment of silver nitrate, salicylic or

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lactic acids, are not only useless, but directly harmful.

8. Cutaneous carcinoma, early and vigorously treated by the caustic method, is a very manageable disease, and of good prognosis.

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CHAPTER X.

ILLUSTRATIVE CASES.

Despite the fact that cancer of the skin is an affection of not very common occurrence, complete records of cases that have been followed up for a sufficient length of time to enable us to form a definite judgment of the ultimate results of treatment are comparatively rare. The visible excrescence can be removed, and the ulceration can be healed by a variety of means; but that does not necessarily imply that the cancer has been cured. For reasons explained in a previous chapter, the cure in many cases is only an apparent one, and the disease reappears in the scar. The excessively slow growth of many of these tumors renders it necessary for a long period to elapse before we are in a position to say whether the procedures that we have employed have been successful or not. Such prolonged observation is not often possible, even in private practice, most cases are not seen after definite cicatrization has been obtained. In public practice, in dispensary and hospital work, it is the rule for the patients to disappear as soon as their trouble is relieved, though they may have been instructed to report again. This is not to be wondered at in a clientele so careless and ignorant; it occurs almost uniformly in our syphilis cases, though an appreciation of the gravity of that affection is much more widespread than is the case with epithelioma.

My records show sixty-six cases of cancer of the skin in over 8,000 of cutaneous disease; a proportion

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of about 0.85 per cent. This corresponds very closely with the figure 0.863 per cent., which is the statistical frequency of the disease in America, according to Hyde. Some of these patients were only seen once, others disappeared before treatment was completed, and hardly any of them returned after the growth had been removed. Judging by the results in the few cases that did remain under observation, and in view of the facts that they were treated by the same methods with apparently satisfactory results, and did not come back, it is not unfair to assume that they were cured. I have yet to meet the first case of cutaneous carcinoma not too far advanced, and thoroughly treated by the caustic method, in which the disease reappeared in the same place.

I append a few typical histories showing the ordinary course of cases of cutaneous carcinoma treated by the caustic method.

CASE I. *Tubercular and papillary epitheliomata of the face; curettement and arsenical paste; no return in five years.*—M. R., female, aged 63. February 10, 1893. Patient appeared with a hard, bean sized, nodule upon her right ala nasi, distinctly carcinomatous in character. She had a small wart or pimple there for many years, but it never bothered her until recently. Of late, however, it has been itchy and stinging, she has scratched it many times until it bled, and during the last few weeks it has been growing quite rapidly. It was removed with a single application of Marsden's arsenical paste; the ulceration soon healed under a simple dressing, and the patient did not reappear until

January 23, 1894. The site of the tumor removed the year before was occupied by a small, smooth, barely perceptible scar; there had been no return.

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She came back on account of another tumor, which she thought was of the same nature. On the nape of the neck, a little to the right of the median line, was a half dollar sized fungating mass, which bled easily, and from which she had had several troublesome hemorrhages. Around the dark red, dry fungous growth was a thick, hard, vascular margin of characteristic appearance, and the tumor was undoubtedly cancerous in its nature. A year before, when the tumor of the nose was removed, there had been a wart there, but the patient had not called my attention to it. The fungous mass was curetted out without local anæsthesia, the hemorrhage was stopped by pressure, and the arsenical paste (Marsden's) applied on a circular piece of muslin large enough to extend fully half an inch beyond the apparent edge of the tumor on all sides. The whole was fixed with adhesive plaster and a bandage, and the patient was directed to leave it in place for forty-eight hours, if the pain was not too severe, and then report. She did not reappear until

January 30, 1894. She had kept the paste on for a week, evidently thinking that a two days' application was good, a seven days' one was better. She had not suffered much pain, had been able to sleep at night, and had only the day before removed the hardened application from the inflamed skin by soaking it with water. There was quite an extensive inflammatory induration of the tissues of the back of the neck, due to the long continued contact of the arsenic with the integument. The site of the tumor and surrounding infiltration was occupied by a circular, insensitive black mass of necrotic tissue one and three-fourth inches in diameter, considerably larger than the original fungous mass. There had been no sys-

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temic reaction, nor any evidences of arsenical intoxication. She was ordered to apply flaxseed poultices.

February 4, 1894. The thick black slough had become partly detached, and it was evident that the entire thickness of the skin down to the subcutanea of the affected area had been destroyed. The dead tissue was surrounded by a distinct suppurating line of demarkation. The induration of the tissues of the neck had disappeared, and the inflammatory reaction was limited to the immediate neighborhood of the diseased tissues. A wet boric acid dressing was applied.

February 11, 1894. The entire necrotic mass was loose, and I removed it with the forceps. The wet dressing was continued.

February 15, 1894. The ulcer had diminished in size, but was still very deep. As the granulations seemed sluggish they were touched with the nitrate of silver stick.

February 20, 1894. The granulations were level with the surface; boric acid ointment applied.

February 26, 1894. Cicatrization completed.

March 28, 1894. The patient reported, as ordered. The scar was smooth, and there was no trace of induration anywhere in it. She was advised to have a number of senile warts which were on her face removed, on account of the marked tendency in her case to the occurrence of cancerous degeneration. This she refused.

June 12, 1898. The patient reappeared at the clinic. The scars marking the sites of the tumors removed four and five years before were inconspicuous, soft and perfectly smooth. She now has a fungating epithelioma the size of a small nut in the centre of her forehead, and a superficial cancerous infiltration, a

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rodent ulcer 1½x1 inch in a size, on the right cheek, just in front of the tragus. I propose to induce local cocaine anæsthesia by cataphoresis, curette, and reapply the arsenical paste.

CASE 2. *Large papillary and tubercular epitheliomata of the forehead and face; curettement and arsenical paste; no return in six years.*—T. S., male, 53 years old. June 10, 1891. Three years before, in 1888, had first noticed an insignificant little scab upon his forehead, and had picked it off. The scab reappeared and continued to do so as often as he removed it, and it apparently got larger each time. Then there appeared a small ulceration under the scab, and, though it gave him no trouble save from the annoyance of its presence, he consulted a physician in the Southern town in which he lived. Since that time he has been under continuous treatment, with various practitioners. The ulcer, small as a French pea at the beginning, has been repeatedly cauterised with sulphuric and nitric acids, bluestone and lunar caustic; it has been treated with various salves; with the result that it had gotten steadily larger and larger, until it occupies nearly one-half his forehead. Some weeks before he gave up his physicians in despair, and had been using a number of advertised cancer remedies since then. The rapid increase of the ulceration of late had so alarmed him that he had come North to consult a specialist.

His condition was as follows: Almost the whole of the left half of the skin covering the forehead was occupied by an extensive ulceration consisting of two irregularly circular and confluent areas. The larger outer area was covered with a moist, reddish brown, hypertrophic fungoid growth, the inner smaller one was a dry, glazed ulceration. The diseased area meas-

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ured 3½x2 inches, and extended from very near the roots of the hair to the eyebrows. The margins and base of the growth were very hard, tumefied, waxy, and vascularised.

On account of the large size of the growth it was treated in two sections, but in the same way, and with the same result. The outer half was taken first, thoroughly curetted under cocaine anæsthesia, and Marsden's paste applied. The patient was of a nervous excitable temperament, and quite sensitive to pain, so that it was necessary to give him a hypodermic injection of morphia to procure sleep at night while the paste was applied. Four applications, two to each portion of the ulceration, were made, each being allowed to remain on for twenty-four hours. Finally the entire ulcerated area, together with the indurated margins and a considerable area of apparently healthy tissue, was changed into a dark slough. There was, of course, marked œdema of the eyelid and the side of the face, but the inflammatory reaction was not excessive. The parts were poulticed until the sloughs came away, and then dressed with a wet boric acid compress. The actual caustic treatment occupied ten days, with the intervals, and the resultant loss of tissue, which was quite great, took some time to fill up. Grafting or transplantation would certainly have been required if excision had been done.

July 18, 1891. The forehead had entirely healed, the scar looked perfectly healthy, and the patient was permitted to go home.

I saw him at least once a year thereafter, when he came North. The scar became whiter, but did not otherwise change, it finally became unrecognizable a short distance away. In 1894 I removed a small can-

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cerous nodule from his cheek, in the same manner as that employed for the larger growth. He died of Bright's disease in 1897, and there had been absolutely no return of the disease in the six years that had elapsed since I destroyed it.

CASE 3. *Tubercular infiltrating epithelioma of the forehead; arsenical paste, twice repeated; no return in one and a half years.*—W. D., female, aged 55 years, June 6, 1886. Patient showed an epithelioma the size of a silver half dollar upon the forehead, forming a red, shiny looking ulceration, with an irregular, hard, infiltrated margin and base of characteristic feel and appearance. No special history was obtainable, the lesion had been present for a long time, pained a little and itched sometimes, but was regarded by the patient as a trifle, obnoxious only from a cosmetic point of view. Two applications of the arsenical paste were made on two successive days, each was kept on for twelve hours during the day time, a carbolized zinc ointment being used at night.

June 9, 1886. The neoplastic tissue was apparently all necrosed. The pain had been moderate. Ordered poultices.

June 13, 1886. Slough was detached; ulceration looked healthy, save along its upper border, where it appeared waxy and swollen, as if some epithelial infiltration had been still left there. Patient also complained of pain in that margin.

June 19, 1886. Ulceration closing up nicely under boric acid ointment. There was a suspicious papillomatous spot in the upper margin of the scar.

June 25, 1886. Ulceration closed; told to await developments and report in three weeks.

August 16, 1886. The cancerous tumor had reappeared in the upper margin of the scar. The paste

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was reapplied, and allowed to remain on for twenty-four hours. The upper infiltrated margin of the scar only broke down.

September 10, 1886. The wound has entirely healed with a smooth and soft scar.

December 2, 1887. Saw the patient as she came to the clinic for some other trouble, the scar was perfectly normal, and there had been no return of the disease.

CASE 4. *Papillary epithelioma of the hand; arsenical paste twice; no return in three years.*—A. A., female, aged 65.—February 2, 1888. Patient had a papillomatous excrescence on the back of her right hand, covering the sulcus between the first and second fingers and the adjacent skin, and the size of a large walnut. This began as a small sore two or three years before, but had never troubled her until recently. It was now growing larger, and interfered with her in her work. The hypertrophic portion of the mass was ablated, pressure applied to stop the hemorrhage, and then the arsenical paste was put on.

February 4, 1888. The paste was now removed. There was a large slough, extending on to the knuckles of the first and second fingers, and on to the backs of the fingers themselves. A poultice was ordered.

February 6, 1888. The slough was loose, and was removed with the dressing forceps. Some induration was left, so the paste and poultice were reapplied.

February 17, 1888. A deep excavation was now present, and apparently all the cancerous tissue had been destroyed. The cell processes evidently extended far beyond the external apparent limits of the disease.

March 14, 1888. The wound had entirely closed, and the scar was satisfactory. No nodule or induration was present anywhere.

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December 10, 1890. Had seen the patient several times during the intervening time; the scar was in perfect condition; there had been no return of the disease.

CASE 5. *Papillary and infiltrating epithelioma of the forehead; curetting; pyrogallol; return of disease in the scar in five months.*—A. V., female, 60 years old. March 25, 1891. One year ago had noticed a pimple on the right temple, which grew slowly, but gave her no pain. Nevertheless, she had been anxious to get rid of it, employing her finger nail, caustic (?), and various other "recommended" things for the purpose. The only result has of course been to stimulate its growth. On the right side of the forehead was a dry, cauliflower-like mass, about the size of a filbert, seated on a hard and indurated base. The protuberant mass was curetted away, and a thirty-three per cent, pyrogallol ointment applied, and, with renewals, kept on a week. The patient hardly complained of any pain at all, the application contrasting very favorably in this respect with the arsenic paste.

April 15, 1891. There was a clean, healthy looking ulcer in the place of the epithelioma. A dressing of powdered boric acid and zinc oxide, equal parts, was applied.

June 10, 1891. The result was apparently excellent; cicatrization was perfect, there was no trace of induration visible; the patient was ordered to report monthly.

August 21, 1891. The scar now began to look suspicious, portions of the margins were swollen and fairly hard to the touch, and the underlying tissues were apparently indurated.

September 11, 1891. The entire scar was swollen and infiltrated, and in one place superficial ulceration

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had just begun. I intended to return to the attack, using a different plan of treatment, but the patient evidently thought that once was enough, and she disappeared.

Case 6. *Rodent ulcer of the nose; pyrogallol; return of disease in three months; nitric acid; no result; potassa fusa; no return in two months.*—H. M., 45 years old. June 12, 1892. This patient has had a scab for six years upon the bridge of her nose, caused, she believed, by the bow of her spectacles. She had never thought anything of it until lately, when it began to get sore and annoy her. Examination revealed a large, bean-sized, superficial epithelioma, a rodent ulcer, seated like a saddle upon the bridge of her nose. A thirty-three per cent. pyrogallol ointment was applied, without causing much pain, and with an apparently excellent result. The induration melted down under the salve, the base of the ulcer cleaned and the lesion began to heal.

July 6, 1892. The patient being apparently cured, I discharged her, but told her to report regularly.

September 14, 1892. Induration had reappeared in the superficial scar. Nitric acid was then applied by means of a glass rod repeatedly.

September 29, 1892. The results had not been encouraging; the action of the nitric acid seemed to be too superficial. I then employed potassa fusa in the shape of a pointed stick, going deeply down into the infiltrated skin in all directions, and neutralising with dilute citric acid immediately afterwards. Then a boric acid ointment. This was done twice a week.

November 1, 1892. The carcinoma was apparently cured, the surface of the scar on the nose being smooth and non-infiltrated. She was ordered to report from time to time, but I then lost sight of her.

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CASE 7. *Papillary epithelioma of the forearm; nitric acid; return in eight weeks; arsenical paste; apparent cure.*—M. C., female, aged 64. April 4, 1894. Had had for many years a small excrescence on the anterior surface of the left forearm, which has grown very slowly until it has attained its present size. There was now a fungating mass 2x1 inch in diameter on the outer surface of the left forearm, a typical cauliflower epithelioma, with its interstices filled with a foul smelling, purulent secretion, and with waxy and infiltrated margins and base. The treatment employed was ablation of the protuberant portion of the growth, and cauterisation of its base, which was thoroughly dug into with a pointed glass rod dipped in nitric acid. This was followed by a poultice until the slough was detached, and then a dressing of carbolized zinc oxide ointment was applied.

May 6, 1894. The ulceration was nearly healed, but parts of the margins still looked waxy and infiltrated. Nitric acid was thoroughly applied again.

June 10, 1894. There were some waxy papules still in the scar, nitric acid was used again.

September 3, 1894. Undoubted return in the scar; nitric acid applied again.

October 2, 1894. Recourse was now had to Marsden's paste, which was applied after the removal of the superficial epidermis with the sharp curette. The result was an apparent cure, but I was unable to follow up the case further.

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